TRADE SECRET

Study Title

H-28548: A REPRODUCTION STUDY WITH THE NORTHERN BOBWHITE QUAIL *(COLINUS VIRGINIANUS)*

Test Guidelines

OECD Guideline 206, Avian Reproduction Test; U.S. EPA Ecological Effects Test Guidelines, OPPTS 850.2300 (draft), Avian Reproduction Test; and U.S. EPA, Pesticide Assessment, Subdivision E, Hazard Evaluation: Wildlife and Aquatic Organisms, Subsection 71-4

Authors

Diana L. Temple
Kathy H. Martin
Joann B. Beavers
Mark Jaber

Date Study Initiated

March 23, 2010

Date Study Completed

November 23, 2010

Performing Laboratory

Wildlife International, Ltd.
8598 Commerce Drive
Easton, Maryland 21601
U.S.A.

Sponsor

E.I. du Pont de Nemours and Company
Wilmington, Delaware 19898
U.S.A.

DuPont Project Identification Numbers

DuPont Report: D-18405-338
Work Request No.: 18405
Service Code: 338

Wildlife International Ltd. Study Number

112-652

GOOD LABORATORY PRACTICE COMPLIANCE STATEMENT

This study was conducted in compliance with the following GLP principles:

- United States Environmental Protection Agency, (TSCA), Title 40 Code of Federal Regulations Part 792 (effective August 17, 1989)

Which are consistent with:

- The OECD Principles of Good Laboratory Practice (ENV/MC/CHEM (98) 17) (Paris, 1998)
- Japan MAFF (11 NohSan, Notification No. 6283) October 1, 1999, with the following exception:

Periodic analyses of water and feed for potential contaminants were not conducted according to Good Laboratory Practice standards, but were performed using a certified laboratory and standard U.S. EPA analytical methods.

Study Director

Diana L. Temple — 11-23-10

Diana L. Temple
Senior Biologist

Date

Applicant/Sponsor

DuPont Representative

Date

QUALITY ASSURANCE STATEMENT

Study Number

112-652 (Wildlife International, Ltd.)

Study Title

H-28548: A Reproduction Study with the Northern Bobwhite Quail *(Colinus Virginianus)*

Activity Audited	*Audit Dates*	*Dates Findings Reported to Study Director*	*Dates Findings Reported to Management*
Protocol	March 29, 2010	March 29, 2010	April 6, 2010
Test substance preparation	April 19, 2010	April 19, 2010	April 23, 2010
Matrix fortifications	April 20, 2010	April 20, 2010	April 21, 2010
Collection of albumin and yolk samples	June 30, 2010	June 30, 2010	July 1, 2010
Data entry	August 19-24, 2010	August 24, 2010	August 26, 2010
Data entry	September 22-23, 2010	September 23, 2010	September 24, 2010
Biological data & draft report	October 5-11, 2010	October 12, 2010	October 22, 2010
Analytical data & draft report	October 12, 2010	October 12, 2010	October 20, 2010
Blood/Liver analytical data & draft report	November 3-5, 2010	November 5, 2010	November 16, 2010
Egg shells/yolk/albumin analytical data & draft report	November 8-10, 2010	November 10, 2010	November 16, 2010
Egg membrane analytical data & draft report	November 12, 2010	November 12, 2010	November 16, 2010
Final report	November 23, 2010	November 23, 2010	November 23, 2010

All inspections were study-based unless otherwise noted.

Jeff H. Suzuki
Quality Assurance Representative

November 23, 2010
Date

CERTIFICATION

H-28548: A REPRODUCTION STUDY WITH THE NORTHERN BOBWHITE QUAIL *(COLINUS VIRGINIANUS)*

We, the undersigned, declare that the work described in this report was performed under our supervision, and that this report provides an accurate record of the procedures and results.

Report by

Diana L. Temple
Study Director

11-23-10
Date

Kathy H. Martin
Scientist

11-23-10
Date

Approved by

Joann B. Beavers
Laboratory Management

11/23/10
Date

Robert Hoke
DuPont Study Monitor

29 Nov 2010
Date

Date Study Initiated

March 23, 2010

Date Study Completed

November 23, 2010

Sponsor

E.I. du Pont de Nemours and Company
Wilmington, Delaware 19898
U.S.A.

TABLE OF CONTENTS

TABLES

APPENDICES

BASIC STUDY INFORMATION

Study Title

H-28548: A Reproduction Study with the Northern Bobwhite Quail *(Colinus virginianus)*

Study Objectives

The objective of this study was to evaluate the effects upon the adult northern quail (*Colinus virginianus*) of dietary exposure to H-28548 over a five-month period. Effects were evaluated on adult health, weight gain and feed consumption. In addition, the effects of adult exposure to the test substance were evaluated on the number of eggs laid, normal development of eggs, viability of the embryos, percent hatchability, offspring survival and egg shell thickness.

Study Director

Diana L. Temple
Wildlife International, Ltd.
8598 Commerce Drive
Easton, Maryland 21601
U.S.A.

Sponsor's Study Monitor

Robert Hoke
E.I. du Pont de Nemours and Company
Wilmington, Delaware 19898
U.S.A.

Technical Staff, Wildlife International, Ltd.

Mark Jaber, Wildlife Toxicologist
Joann B. Beavers, Director of Avian Toxicology
Diana L. Temple, Senior Biologist
Kathy H. Martin, Scientist
Patrick Hubbard, Biologist
Mike Hammond, Biologist
Tiffany Rein, Biologist
Megan Wikander, Biologist
Joanne Harvey, Senior Technologist
Richard Wilson, Technologist
James McAlpine, Technologist

Test Item

H-28548

Testing Facilities

Wildlife International, Ltd.
8598 Commerce Drive
Easton, Maryland 21601
U.S.A.

H-28548: A REPRODUCTION STUDY WITH THE NORTHERN BOBWHITE QUAIL *(COLINUS VIRGINIANUS)*

1.0 SUMMARY

STUDY: H-28548: A Reproduction Study with the Northern Bobwhite Quail *(Colinus Virginianus)*

SPONSOR: E.I. du Pont de Nemours and Company

WILDLIFE INTERNATIONAL, LTD. PROJECT NUMBER: 112-652

TEST DATES: Study Initiation – March 23, 2010
Experimental Start (OECD) – March 23, 2010
Experimental Start (EPA) – March 24, 2010
Photostimulation – May 12, 2010
First Eggs Set – June 10, 2010
Analytical Termination – November 10, 2010
Adult Termination – August 11, 2010
Biological Termination – September 21, 2010
Experimental Termination – November 10, 2010

TEST ANIMALS: Northern Bobwhite (*Colinus virginianus*)

AGE TEST ANIMALS: 31 weeks of age at the initiation of the test

SOURCE TEST ANIMALS: M & M Quail Farm
4090 Campbell Road
Gillsville, GA 30543
U.S.A.

NOMINAL TEST CONCENTRATIONS: 0, 100, 500 and 1000 ppm

RESULTS: There were no treatment-related mortalities, overt signs of toxicity or treatment-related effects upon body weight or feed consumption at any of the concentrations tested. Additionally, there were no treatment-related effects upon reproductive performance parameters measured at the 100, 500 or 1000 ppm test concentrations. The no-observed-effect concentration for northern bobwhite exposed to H-28548 in the diet during this study was 1000 ppm (equivalent to 84.5 mg/kg/day), the highest concentration tested.

2.0 INTRODUCTION

This study was conducted by Wildlife International, Ltd. for E.I. du Pont de Nemours and Company at the Wildlife International, Ltd. avian toxicology facility in Easton, Maryland 21601. The biological portion of the test was conducted from March 24, 2010 until September 20, 2010. Raw data generated at Wildlife International, Ltd. and a copy of the final report are filed under project number 112-652 in archives located on the Wildlife International, Ltd. site.

3.0 OBJECTIVES

The objective of this study was to evaluate the effects of dietary exposure to H-28548 upon adult northern bobwhite quail (*Colinus virginianus*) over a five-month period. Effects were evaluated on adult health, weight gain and feed consumption. In addition, the effects of adult exposure to H-28548 were evaluated on the number of eggs laid, normal development of eggs, viability of the embryos, percent hatchability, offspring survival, and egg shell thickness.

4.0 EXPERIMENTAL DESIGN

Northern bobwhite quail (64 males and 64 females) were randomly distributed into one control group and three treatment groups. The test concentrations were selected based upon the results of a pilot reproduction study (Wildlife International, Ltd. project number 112-651) and in consultation with the Sponsor.

H-28548 Treatment Groups

	Nominal Concentration	Pens per	Birds per Pen	
Group	(ppm)	Group	Males	Females
1	(Control) 0	16	1	1
2	100	16	1	1
3	500	16	1	1
4	1000	16	1	1

Each treatment and control group contained 16 pairs of birds with one male and one female per pen. Three treatment groups were fed diets containing either 100, 500 or 1000 ppm of H-28548 for 20 weeks. The control group was fed diet comparable to the treatment groups but without the addition of the test substance.

All adult birds were observed daily throughout the test for signs of toxicity or abnormal behavior. Adult body weights were measured at test initiation, on Weeks 2, 4, 6, 8 and at adult termination and feed consumption was measured weekly throughout the test. At the beginning of Week 8, the photoperiod was increased to induce egg production. Following the start of egg production, eggs were set weekly for incubation. Weekly, eggs were selected by indiscriminate

draw for egg shell thickness measurement and potential test substance content analyses. All remaining eggs were candled prior to incubation to detect egg shell cracks or abnormal eggs. Eggs were also candled twice during incubation to detect infertile eggs or embryo mortality. On Day 21 of incubation, the eggs were placed in a hatcher and allowed to hatch. Once hatching was completed, hatchlings were removed from the hatcher and the group body weight of the hatchlings by pen was determined. At 14 days of age, the average body weight by parental pen of all surviving offspring was determined. Upon completion of the test, statistical analyses were performed to determine statistically significant differences between groups.

5.0 MATERIALS AND METHODS

The study was conducted according to the procedures outlined in the protocol, "H-28548: A Reproduction Study with the Northern Bobwhite Quail, *Colinus virginianus*". The protocol was based on procedures outlined in the Environmental Protection Agency's Registration Guidelines Pesticide Assessment Guidelines, FIFRA Subdivision E, Hazard Evaluation: Wildlife and Aquatic Organisms, Subsection 71-4; OECD Guideline 206; the ASTM "Standard Practice for Conducting Reproductive Studies with Avian Species"; and U.S. Environmental Protection Agency Series 850 – Ecological Effects Test Guidelines OPPTS Number 850.2300 (1,2,3,8).

5.1 Test Substance

The test substance, H-28548, was received from Haskell Global Centers for Health and Environmental Sciences on October 5, 2009 and was assigned Wildlife International, Ltd. identification number 9215 upon receipt. The test substance was a liquid and was identified as: HFPO dimer acid ammonium salt, batch/lot number E109540-44A. The test material had a reported purity of 84% with an expiration date of June 13, 2011 (Appendix XIII). The test substance was held under ambient conditions in locked storage at the Wildlife International, Ltd. facilities in Easton, Maryland. Concentrations of the test substance in the diet are expressed as parts per million (ppm) in the diet and were not adjusted to 100% active ingredient.

5.2 Test Organisms

Approximately eighty-six pairs of pen-reared northern bobwhite quail were purchased from M & M Quail Farm, 4090 Campbell Road, Gillsville, GA 30543, U.S.A. At the start of acclimation, the northern bobwhite quail were apparently healthy and phenotypically indistinguishable from wild type. The birds were approaching their first breeding season and had not been used in any previous testing. At the start of acclimation, a random number generating function in a spreadsheet program was used to randomize pen assignment for each bird. Immediately prior to test initiation, all potential study birds were examined for physical injuries and general health. Birds that did not appear healthy, either due to injury or inability to acclimate to laboratory conditions, or that were outside the weight range for the test, were excluded from the study. All birds were

approximately 31 weeks of age at test initiation (first day of exposure to test diet) and ranged in weight from 172 to 242 grams at test initiation. Sex of the birds was determined by a visual examination of the plumage.

5.3 Identification

Adult birds were identified by individual leg bands, each pen was identified with a unique number and groups of pens were identified by project number and concentration. All eggs laid during the study were marked with the pen number using a permanent ink marking pen for identification. Hatchlings were identified by leg bands so that they could be traced to their parental pen of origin.

5.4 Avian Feed and Water

All adult birds and their offspring were given feed and water ad libitum during acclimation and testing. The basal diet fed to both adults and offspring was formulated to Wildlife International, Ltd. specifications by Cargill Animal Nutrition, Shippensburg, PA (Appendix I, Table 1). The basal ration contained at least 27% protein, 2.5% crude fat, and no more than 3.8% crude fiber.

The basal diet contained approximately 1.0% calcium, derived from feedstuffs and the 0.62% limestone used in the formulation of the basal diet by Cargill. While this level of calcium is sufficient for growth and maintenance rations, additional calcium is required in the ration of breeding birds for egg shell formation. Therefore, an additional 5% (w/w) of limestone (approximately 38.5% Ca) was added to the basal diet for the adults. This raised the calcium level in the diet for the breeding birds to approximately 3%, slightly above the minimum recommended for quail (2.4%) (4). Offspring received basal diet without test substance and without the addition of 5% supplemental limestone.

Water was supplied by the town of Easton, MD public water supply. All offspring received a water-soluble vitamin and electrolyte mix in their water (Appendix I, Table 2). Neither the adults nor offspring received any form of medication in the feed during the test. Feed and water were analyzed periodically in accordance with Wildlife International, Ltd. Standard Operating Procedures.

5.5 Dosage Preparation and Dosing

Test diets were prepared by mixing H-28548 into a premix that was used for weekly preparation of the final diet. Control diet and each of the three treated diets were prepared weekly beginning on March 24, 2010 and presented to the birds on Wednesday of each week. Dietary concentrations were not adjusted for purity of the test substance and are presented as parts per million (ppm). Details of the weekly preparation of test and control diets are shown in Appendix II.

5.6 Diet Sampling and Analysis

Homogeneity of the test substance in the diet was evaluated by collecting six samples from each of the treated diets and one sample from the control diet on Day 0 of Week 1. Samples were collected from the top, middle and bottom of the left and right sections of the mixing vessel. Control and treatment group diet

samples were also collected from the feeders on Day 7 of Week 1 to assess stability of the test substance under actual test conditions. Additionally, samples were collected from the control and treatment group diets during Weeks 2, 3, 4, 8, 12, 16 and 20 of the test to measure/verify test concentrations. The diet samples were transferred to the Wildlife International, Ltd. chemistry facility and stored frozen prior to analysis.

The method used for the analysis of H-28548 in the avian diet was based upon methodology developed by Wildlife International, Ltd.

Samples were extracted with methanol:water (90:10). A method outline is provided in Appendix XIV, Figure 1. Concentrations of H-28548 in extracts of the samples were determined by high performance liquid chromatography coupled with mass spectroscopy using an Agilent Series 1100 High Performance Liquid Chromatograph with a Perkin-Elmer SCIEX API 100 Mass Spectrometer. High performance liquid chromatographic separations were achieved using a Thermo, Betasil C-18 analytical column (50 mm x 2.1 mm I.D., 5 µm particle size). The instrument parameters are summarized in Appendix XIV, Table 1.

Calibration standards of H-28548, ranging in concentration from 0.0100 to 0.100 µg/mL, were analyzed with each sample set. Linear regression equations were generated using the peak area responses versus the respective concentrations of the calibration standards. An example of a calibration curve is presented in Appendix XIV, Figure 2. The concentration of test substance in the samples was determined by substituting the peak area responses into the applicable linear regression equation. Typical chromatograms of low-level and high-level calibration standards are shown in Appendix XIV, Figures 3 and 4, respectively. Examples of equations used in calculations are presented in Appendix XIV, Table 2.

The instrument limit of detection (LOD) was set based upon the injection volume (10 µL) and the lowest standard concentration 0.0100 µg/mL. The LOD was set at 0.100 ng on-column. The method limit of quantitation (LOQ) for these analyses was set at 5 ppm based upon the product of the lowest analytical standard and the dilution factor for the control. Measured values greater than or equal to the LOQ were reported. Examples of equations used in calculations are presented in Appendix XIV, Table 2.

Along with the sample analyses, eight matrix blanks were analyzed to determine possible interferences. No interferences were observed at or above the ppm equivalent of the lowest standard during the sample analyses (Appendix XIV, Table 3). A typical chromatogram of a matrix blank is presented in Appendix XIV, Figure 5.

Avian diet samples were fortified at 25, 500 and 1200 ppm and analyzed concurrently with the samples to determine the mean procedural recovery. The

method yielded mean procedural recoveries of 94%, 105%, 100%, 100%, 113%, 114%, 102% and 93%. These values correspond to each sample set analyzed during the definitive study (Appendix XIV, Table 3). Sample measured concentrations were not corrected for the mean procedural recoveries from each sample set. A typical chromatogram of a matrix fortification is presented in Appendix XIV, Figure 6.

5.7 Analysis of H-28548 in Blood, Liver, Egg Albumin, Yolk, Shells and Membranes

The method used for the analysis of H-28548 in the avian blood, liver, egg albumin, egg yolk, egg membrane and egg shells was based upon methodology developed by Wildlife International, Ltd.

Samples matrices were extracted with various methods that can be found in Appendix XV. A method outline for blood analysis is provided in Appendix XV, Figure 1, liver analysis Figure 8, albumin analysis Figure 12, egg yolk analysis Figure 16, eggshells analysis Figure 20 and egg membrane analysis Figure 24. Concentrations of H-28548 in extracts of the samples were determined by high performance liquid chromatography coupled with mass spectroscopy using an Agilent Series 1100 High Performance Liquid Chromatograph with a Perkin-Elmer SCIEX API 100 Mass Spectrometer. High performance liquid chromatographic separations were achieved using a Thermo, Phenyl analytical column (50 mm x 2.1 mm I.D., 5 µm particle size). The instrument parameters are summarized in Appendix XV, Table 1.

Calibration standards of H-28548, ranging in concentration from 0.250 µg/L to 5.00 µg/L, were analyzed with each sample set. Linear regression equations were generated using the peak area responses versus the respective concentrations of the calibration standards. An example of calibration curve is presented in Appendix XV, Figure 2. The concentration of test substance in the samples was determined by substituting the peak area responses into the applicable linear regression equation. Typical chromatograms of low-level and high-level calibration standards are shown in Appendix XV, Figures 3 and 4, respectively. Examples of equations used in calculations are presented in Appendix XV, Table 2.

The instrument limit of detection (LOD) was set at the lowest standard concentration 0.250 µg/L. The method limit of quantitation (LOQ) for these analyses was set at 7.5 ppb for blood, 3.75 µg/Kg for liver, for egg albumin 3.75 µg/Kg, egg yolk 6.25 µg/Kg, egg shells 3.75 µg/Kg, and egg membrane 9.38 µg/Kg based upon the product of the lowest analytical standard and the dilution factor for the control. Measured values greater than or equal to the LOQ were reported. Examples of equations used in calculations are presented in Appendix XV, Table 2.

Along with the blood sample analyses, five matrix blanks were analyzed to determine possible interferences. No interferences were observed at or above the

LOQ during the sample analyses (Appendix XV, Table 3). A typical chromatogram of a matrix blank is presented in Appendix XV, Figure 5.

Avian blood samples were fortified at 25, 1000, 10000 and 20000 ppb and analyzed concurrently with the samples to determine the mean procedural recovery. The method yielded mean procedural recoveries of 102%, 99%, 103% 96% and 94 %. These values correspond to each sample set analyzed during the definitive study (Appendix XV, Table 3). Sample measured concentrations were not corrected for the mean procedural recoveries from each sample set. A typical chromatogram of a matrix fortification is presented in Appendix XV, Figure 6.

Along with the Liver sample analyses, five matrix blanks were analyzed to determine possible interferences. No interferences were observed at or above the LOQ during the sample analyses (Appendix XV, Table 6). A typical chromatogram of a matrix blank is presented in Appendix XV, Figure 9.

Avian Liver samples were fortified at 25, 1000 and 10000 ppb and analyzed concurrently with the samples to determine the mean procedural recovery. The method yielded mean procedural recoveries of 87%, 97%, 86% 93% and 82 %. These values correspond to each sample set analyzed during the definitive study (Appendix XV, Table 6). Sample measured concentrations were not corrected for the mean procedural recoveries from each sample set. A typical chromatogram of a matrix fortification is presented in Appendix XV, Figure 10.

Along with the albumin sample analyses, two matrix blanks were analyzed to determine possible interferences. No interferences were observed at or above the LOQ during the sample analyses (Appendix XV, Table 9). A typical chromatogram of a matrix blank is presented in Appendix XV, Figure 13.

Avian albumin samples were fortified at 25, 1000 and 20000 ppb and analyzed concurrently with the samples to determine the mean procedural recovery. The method yielded mean procedural recoveries of 102% and 113%. These values correspond to each sample set analyzed during the definitive study (Appendix XV, Table 9). Sample measured concentrations were not corrected for the mean procedural recoveries from each sample set. A typical chromatogram of a matrix fortification is presented in Appendix XV, Figure 14.

Along with the egg yolk sample analyses, two matrix blank were analyzed to determine possible interferences. No interferences were observed at or above the LOQ during the sample analyses (Appendix XV, Table 10). A typical chromatogram of a matrix blank is presented in Appendix XV, Figure 17.

Avian egg yolk samples were fortified at 25, 1000 and 20000 ppb and analyzed concurrently with the samples to determine the mean procedural recovery. The method yielded mean procedural recoveries of 90% and 90%. These values correspond to each sample set analyzed during the definitive study (Appendix

XV, Table 10). Sample measured concentrations were not corrected for the mean procedural recoveries from each sample set. A typical chromatogram of a matrix fortification is presented in Appendix XV, Figure 18.

Along with the eggshell sample analyses, one matrix blanks was analyzed to determine possible interferences. No interferences were observed at or above the LOQ during the sample analyses (Appendix XV, Table 11). A typical chromatogram of a matrix blank is presented in Appendix XV, Figure 21.

Avian eggshell samples were fortified at 25, 1000 and 20000 ppb and analyzed concurrently with the samples to determine the mean procedural recovery. The method yielded a mean procedural recovery of 101%. This value corresponds to the sample set analyzed during the definitive study (Appendix XV, Table 11). Sample measured concentrations were not corrected for the mean procedural recovery from the sample set. A typical chromatogram of a matrix fortification is presented in Appendix XV, Figure 22.

Along with the egg membrane sample analyses, one matrix blank was analyzed to determine possible interferences. An interference was observed at or above the LOQ during the sample analyses (Appendix XV, Table 13). A typical chromatogram of a matrix blank is presented in Appendix XV, Figure 25.

Avian egg membrane samples were fortified at 25, 1000 and 20000 ppb and analyzed concurrently with the samples to determine the mean procedural recovery. The method yielded a mean procedural recovery of 133%. This value corresponds to the sample set analyzed during the definitive study (Appendix XV, Table 13). Sample measured concentrations were not corrected for the mean procedural recovery from the sample set. A typical chromatogram of a matrix fortification is presented in Appendix XV, Figure 26.

5.8 Study Phases

The primary phases of the study and their approximate durations were:

1. Acclimation - 10 weeks.
2. Pre-photostimulation - 7 weeks.
3. Pre-egg laying (with photostimulation) - 2 weeks.
4. Egg laying - Approximately 11 weeks.
5. Post-adult termination (final incubation, hatching, and 14-day offspring rearing period) - 6 weeks.

5.9 Housing and Environmental Conditions

Housing and husbandry practices were conducted so as to adhere to the guidelines established by the National Research Council (5). The adult birds were housed indoors in batteries of pens manufactured by Georgia Quail Farm Manufacturing (GQFM Model No. 0330), measuring approximately 25 X 51 cm. The pens had sloping floors that resulted in ceiling height ranging from 20 to 26 cm. The pens were constructed of wire mesh and galvanized sheeting. Sisal ropes were added

to each pen for animal enrichment from the time of photostimulation to termination. A diagram of the test layout is presented in Appendix XV.

Each pen was equipped with feed and water troughs. Weekly, sufficient feed for the feeding period was placed in the trough for each pen and presented to the birds. During the feeding period additional feed was weighed and added to the troughs as needed. Water troughs were changed and water added as necessary to provide potable water (generally every 2-3 days).

Only birds associated with this study were maintained in the study room in order to avoid excessive disturbances. The average temperature in the adult northern bobwhite quail study room during the course of the test was 21.1 ± 0.9°C (SD) with an average relative humidity of 60 ± 14% (SD). The air handling system in the study room was designed to vent up to 15 room air volumes every hour and replace them with fresh air.

The photoperiod in the adult northern bobwhite quail room was maintained by a time clock. The photoperiod during acclimation and the first seven weeks of the test was eight hours or less of light per day. The photoperiod was increased to 17 hours of light per day at the beginning of Week 8 to induce egg laying and was maintained at that length until the adult birds were euthanized. Throughout the test, the birds received a mean of approximately 343 lux (~ 32 ft. candles) of illumination provided by fluorescent lights that closely approximated noon-day sunlight.

5.10 Observations

The test birds were acclimated to the facilities and study pens for ten weeks prior to initiation of the test. During acclimation, all birds were observed daily. Birds exhibiting abnormal behavior or debilitating physical injuries were not used for the test. During the study, all adult birds were observed daily for signs of toxicity or abnormal behavior. Additionally, all offspring were observed daily from hatching until 14 days of age. A record was maintained of all mortalities and clinical observations.

5.11 Necropsy

At the conclusion of the exposure period, blood was drawn from all adult birds prior to euthanasia. The blood was separated and the serum collected and stored frozen for potential analysis. After euthanasia by asphyxiation with carbon dioxide gas, livers from each bird were collected, weighed and placed in appropriately labeled containers and stored frozen for potential analysis. All adult birds were subjected to gross necropsy and disposed of by incineration.

5.12 Animal Body Weights/Feed Consumption

Adult body weights were measured at test initiation, at the end of Weeks 2, 4, 6, 8 and at adult termination. Body weights were not measured during egg laying because of the possible adverse effects handling may have on egg production.

Feed consumption for each pen was measured weekly throughout the test. Feed consumption was determined by weighing the freshly filled feeder on Day 0, recording the amount of any additional diet added during the week and weighing the feeder and remaining feed at the end of the feeding period (Day 7). An attempt was made to minimize feed wastage by the birds by using externally mounted feeders designed with a "feed-saver" lip. Feed wastage was further reduced by placement of a piece of wire grid on the top of the feed. The wire grid allowed the birds to feed unencumbered but prevented the birds from scooping or pushing feed out of the feeder. The amount of feed wasted by the birds was not quantified since the wasted feed was normally scattered and mixed with water and excreta. Therefore, feed consumption is presented as an estimate of total feed consumption.

5.13 Egg Collection and Storage

Eggs were collected daily from all pens, when available. The eggs were stored in a cold room until incubation. The cold room was maintained at a mean temperature of 14.0 ± 0.1°C (SD) with a mean relative humidity of approximately 89 ± 0% (SD). Groups of eggs were identified by an alphabetic lot code. All eggs laid in a weekly interval were considered as one lot.

5.14 Candling and Incubation

At the end of the weekly interval, all eggs were removed from the cold room, counted and eggs selected by indiscriminate draw for egg shell thickness measurement. The remaining eggs were candled with a Speed King (Model No. 32) egg-candling lamp to detect egg shell cracks or abnormal eggs. Cracked or abnormal eggs were recorded and discarded. All eggs to be incubated were fumigated with formaldehyde gas in an airtight cabinet with a circulating fan for approximately two hours, to reduce the possibility of pathogen contamination prior to incubation. Formaldehyde gas was generated by combining 20 g of potassium permanganate and 19 ml of 37% commercial grade formalin in a porcelain bowl at the base of the airtight cabinet.

All eggs not discarded or used for egg shell thickness measurements were placed in a NatureForm Incubator/Hatcher (Model No. NMC 4000 or No. 2340). In the incubator the temperature was maintained at an average 37.4 ± 0.0°C (SD) with an average relative humidity of 55 ± 0% (SD). The incubator was equipped with a pulsator fan and blades that produced a mild breathing air movement designed to eliminate intracabinet temperature and humidity variation during incubation. In order to prevent adhesion of the embryo to the shell membrane, the incubator was also equipped with an automatic egg rotation device, designed to rotate the eggs from 45° off of vertical in one direction to 45° off of vertical in the opposite direction (total arc of rotation was 90°) every two hours through Day 21 of incubation. Eggs were candled on Day 11 of incubation to determine embryo viability and on Day 21 to determine embryo survival.

On Day 21 of incubation, the eggs were placed in a NatureForm Incubator/Hatcher (Model No. 2340) and allowed to hatch. Pedigree baskets con-

structed of galvanized steel wire mesh were used to keep hatchlings separated by parental pen of origin. Eggs were not rotated in the hatcher. The average temperature in the hatching compartment was 37.3 ± 0.0°C (SD), with an average relative humidity of 59 ± 1°C (SD).

All hatchlings, unhatched eggs and egg shells were removed from the hatcher on Day 25 or 26 of incubation. The group body weight was determined by pen for the surviving hatchlings. Hatchlings were leg banded for identification by pen of origin and then routinely housed according to the appropriate parental concentration grouping in brooding pens until 14 days of age. The hatchlings were fed untreated diet without the addition of 5% supplemental limestone. At 14 days of age, the average body weight by parental pen of all surviving chicks was determined. The chicks were euthanized by asphyxiation with carbon dioxide and disposed of by incineration.

Hatchlings were housed in batteries of brooding pens manufactured by Beacon Steel Company (Model B735Q). Each pen measured approximately 72 X 90 X 23 cm high. The external walls and ceilings of each pen were constructed of galvanized wire mesh and galvanized sheeting. Floors were of galvanized wire mesh. Thermostats in the brooding compartment of each pen were set to maintain a temperature of approximately 38° C from the time of hatching until the birds were 14 days of age. The average ambient room temperature was 26.6 ± 2.1°C (SD) with an average relative humidity of 58 ± 12% (SD). The photoperiod for the hatchlings was maintained by a time clock at 16 hours of light per day.

5.15 Egg Shell Thickness Measurements

Weekly throughout the egg laying period, one egg was collected, when available, from each of the odd numbered pens during odd numbered weeks (1,3,5, etc.) and from each of the even numbered pens during the even numbered weeks (2,4,6, etc.). The eggs were opened at the waist, the contents removed. The contents were separated into albumin and yolk, placed in appropriate labeled containers and stored frozen for potential analysis. The empty shells were thoroughly rinsed with water and the lower portion was divided between shell and membrane and placed in appropriately labeled containers and stored frozen for potential analysis. The upper (rounded) portion of the shells were then allowed to air dry for at least two weeks at room temperature. The average thickness of the dried shell plus the membrane was determined by measuring five points around the waist of the egg using a micrometer. Measurements were made to the nearest 0.002 mm.

5.16 Statistical Calculations

Sample units were the individual pens within each experimental group except for adult body weights where the sample unit was the individual bird. While neither bird died, based upon incidental injuries, which included extensive foot lesions for the male and extensive head and neck lesions for the female, sustained, data from Pen 413 of the control group was treated as if mortality had occurred during Week 10. While no reproductive data were used, body weight and feed

consumption data were used up to Week 10. Upon completion of the test, an analysis of variance (ANOVA) was performed to determine statistically significant differences between groups. Dunnett's multiple comparison procedure (6,7) was used to compare the three treatment means with the control group mean and assess the statistical significance of the observed differences. Percentage data were examined using Dunnett's method following arcsine square root transformation (see Appendix III for reproductive parameters). Each of the following parameters was analyzed statistically:

1. Adult Body Weight - Individual body weight was measured at test initiation, at the end of Weeks 2, 4, 6, 8 and at adult termination. Statistical comparisons were made between the control group and each treatment group at each weighing interval by sex.
2. Adult Feed Consumption - Feed consumption expressed as grams of feed per bird per day was examined by pen weekly during the test. Statistical comparisons were made between the control and each treatment group.
3. Eggs Laid of Maximum Laid - The number of eggs laid per female divided by the largest number of eggs laid by any one female. This transformation was used to convert the number of eggs laid to a percentile value less than or equal to 100.
4. Eggs Cracked of Eggs Laid - The number of eggs determined by candling to be cracked divided by the number of eggs laid per pen.
5. Viable Embryos of Eggs Set - The number of viable embryos at the Day 11 candling was divided by the number of eggs set per pen.
6. Live 3-Week Embryos of Viable Embryos - The number of live embryos at the Day 21 candling was divided by the number of viable embryos per pen.
7. Hatchlings of 3-Week Embryos - The number of hatchlings removed from the hatcher was divided by the number of live 3-week embryos per pen.
8. 14-Day Old Survivors of Hatchlings - The number of 14-day old survivors was divided by the number of hatchlings per pen.
9. Hatchlings of Eggs Set - The number of hatchlings was divided by the number of eggs set per pen.
10. 14-Day Old Survivors of Eggs Set - The number of 14-day old survivors was divided by the number of eggs set per pen.
11. Hatchlings of Maximum Set - The number of hatchlings per female divided by the largest number of eggs set from any one female. This transformation was used to convert the number of hatchlings to a percentile value equal to or less than 100.
12. 14-Day Old Survivors of Maximum Set - The number of 14-day old survivors per pen divided by the largest number of eggs set.

13. Egg Shell Thickness - The average egg shell thickness of indiscriminately selected eggs per pen was measured.

14. Offspring's Body Weight - The group body weights of surviving hatchlings and 14-day old survivors were measured by parental pen group.

6.0 RESULTS

Mature northern bobwhite quail received H-28548 at nominal dietary concentrations of 100, 500 or 1000 ppm for 20 weeks. A control group was maintained concurrently with the treatment groups.

6.1 Analytical Results

None of the control samples showed any indication of the presence of the test substance or of the presence of a co-eluting substance at the characteristic retention time of the test substance. Diet samples were collected from the 100, 500 and 1000 ppm test concentrations, and were analyzed to evaluate the homogeneity of the test substance in the diet. Means and standard deviations for the test concentrations were 91.1 ± 8.43 ppm (n=6), 487 ± 55.0 ppm (n=6) and 944 ± 85.1 ppm (n=6), respectively. The coefficients of variation were 9.26%, 11.3% and 9.01%, respectively (Appendix XIV, Table 4). Samples collected during the test to verify test substance concentrations for the 100, 500 and 1000 ppm diets had means and standard deviations of 90.8 ± 9.20 ppm (n=14), 476 ± 72.6 ppm (n=14) and 950 ± 127 ppm (n=14), respectively. The coefficients of variation were 10.1%, 15.3%, and 13.4%. These values represented 91%, 95% and 95% of nominal concentrations (Appendix XIV, Table 5). Analysis of diet samples collected from feeders after being held at ambient temperature for 7 days averaged 109%, 114% and 104% of the Day 0 values for the 100, 500, and 1000 ppm test concentrations, respectively (Appendix XIV, Table 6). A typical chromatogram of a test sample is shown in Appendix XIV, Figure 7.

6.2 Blood Analysis

None of the control samples showed any indication of the presence of the test substance or of the presence of a co-eluting substance at the characteristic retention time of the test substance. Blood samples were collected from birds that were exposed to diets fortified with H-28548 at 100, 500 and 1000 ppm nominal test concentrations. The means and standard deviations for residues found in blood at the three test concentrations were 1220 ± 714 ppb, 2678 ± 2336 ppb and 5110 ± 5346 ppb, respectively (Appendix XV, Table 4). Blood samples collected from the offspring of the adult pair had no measurable values above or at the LOQ (Appendix XV, Table 5). A typical chromatogram of a test sample is shown in Appendix XV, Figure 7.

6.3 Liver Analysis

None of the control samples showed any indication of the presence of the test substance or of the presence of a co-eluting substance at the characteristic retention time of the test substance. Liver samples were collected from birds of corresponding blood samples that were exposed to diets fortified with H-28548 at

100, 500 and 1000 ppm test concentrations. The means and standard deviations for residues found in liver at the three test concentrations were 438 ± 301 ppb, 991.1 ± 858.6 ppb and 2008 ± 1730 ppb, respectively (Appendix XV, Table 7). Liver samples collected from the offspring of the adult pairs had no measurable values above or at the LOQ (Appendix XV, Table 8) in adults exposed at the 100 ppm diet. The means and or standard deviations for residues found in liver at the two test concentrations of 500 and 1000 were 10.2 ± 4.03 ppb and 6.57 ± 1.09 ppb, respectively for samples that had residues above the LOQ (Appendix XV, Table 8). A typical chromatogram of a test sample is shown in Appendix XV, Figure 11.

6.4 Egg Albumin Analysis

None of the control samples showed any indication of the presence of the test substance or of the presence of a co-eluting substance at the characteristic retention time of the test substance. Albumin samples were collected from eggs in which birds were exposed to diets fortified with H-28548 at 100, 500 and 1000 ppm test concentrations. The means and standard deviations for residues found in albumin at the three test concentrations were 56.2 ± 24.5 ppb, 240 ± 87.4 ppb and 412 ± 189 ppb, respectively (Appendix XV, Table 12). A typical chromatogram of a test sample is shown in Appendix XV, Figure 15.

6.5 Egg Yolk Analysis

None of the control samples showed any indication of the presence of the test substance or of the presence of a co-eluting substance at the characteristic retention time of the test substance. Yolk samples were collected from eggs in which birds were exposed to diets fortified with H-28548 at 100, 500 and 1000 ppm test concentrations. The means and standard deviations for residues found in yolks at the three test concentrations were 1361 ± 524 ppb, 7118 ± 1128 ppb and 12448 ± 3120 ppb, respectively (Appendix XV, Table 12). A typical chromatogram of a test sample is shown in Appendix XV, Figure 19.

6.6 Eggshell Analysis

The control samples showed some indication of the presence of the test substance or of the presence of a co-eluting substance at the characteristic retention time of the test substance These values were above the reported LOQ (Appendix XV, Table 12). Eggshell samples were collected from eggs in which birds were exposed to diets fortified with H-28548 at 100, 500 and 1000 ppm test concentrations. The means and standard deviations for residues found in eggshells at the three test concentrations were 105 ± 170 ppb, 83.4 ± 17.1 ppb and 216 ± 95.5 ppb, respectively (Appendix XV, Table 12). A typical chromatogram of a test sample is shown in Appendix XV, Figure 23.

6.7 Egg membrane Analysis

The control sample was a composite of membranes from egg lots where most of the egg albumin, yolk and shells analysis was done. The control sample showed a

slight indication of the presence of the test substance or of the presence of a co-eluting substance at the characteristic retention time of the test substance. This values was below the reported LOQ (Appendix XV, Table 14). Egg membrane samples were a composite collected from eggs lots in which most of the other egg albumin, yolk and shells analyses occurred and that birds were exposed to diets fortified with H-28548 at 100, 500 and 1000 ppm test concentrations. The measured values for those samples at the three test concentrations were 37.1 ppb, 170 ppb and 128 ppb, respectively (Appendix XV, Table 14). A typical chromatogram of a test sample is shown in Appendix XV, Figure 27.

6.8 Mortalities

No mortalities occurred during the test.

6.9 Clinical Observations

No overt signs of toxicity were observed at any tested concentrations. Incidental clinical observations noted during the test included those that normally are associated with injuries and penwear. Such signs included feather loss, foot, head, neck and back lesions, bumps, bruising and swelling. Additional clinical observations included lameness, a ruffled appearance, wing droop and ventral head curl.

The male from Pen 413 of the control group was noted with extensive foot lesions during Week 10 and weight loss during Week 12. The female in Pen 413 was noted with her head caught in the caging and extensive head and neck lesions during Week 20. The pair was separated during Week 20. Based upon the debilitated condition of both birds at test termination (male and female body weights of 175 and 147 g, respectively), the pen was treated for statistical analysis of the data as if mortality had occurred during Week 10. The female in Pen 445 of the 500 ppm treatment group was noted as thin during Week 20 of the test. No other clinical signs or injuries occurred. With the exception of incidental findings, all birds appeared normal throughout the study. Daily clinical observations are presented in Appendix IV.

6.10 Gross Necropsy

All surviving adults were subjected to gross necropsy following adult termination. All findings observed were considered unrelated to treatment. Necropsy findings are reported in Table 7 and Appendix XII.

6.11 Adult Body Weight

There were no apparent treatment-related effects upon adult body weight at any tested concentrations. No statistically significant differences between the control group and the 100, 500 or 1000 ppm treatment groups were observed at any of the body weight intervals. Mean body weight measurements are presented in Table 1 and Figures 1 and 2. Individual body weight measurements are presented in Appendix V.

6.12 Adult Feed Consumption

There were no apparent treatment-related effects upon feed consumption at any tested concentrations. No statistically significant differences between the control group and the 100, 500 or 1000 ppm treatment groups were observed at any of the feed consumption intervals. Mean feed consumption measurements are shown in Table 2 and Figure 3. Feed consumption measurements by pen are presented in Appendix VI.

Estimated test substance intakes(i.e., estimated, daily dietary dose) for northern bobwhite quail were calculated by treatment group for the pre-egg production period, the egg production period and the overall adult period using the following formula:

$$\text{Estimated Daily Dietary Dose (mg/kg body weight/day)} = \frac{\text{Test Concentration (mg/kg)} \times \text{Mean Feed Consumption (g/bird/day)}}{\text{Mean Body Weight (g/bird)}}$$

The mean body weight value is the mean of both male and female body weights. For the pre-egg production interval the body weights were averaged over Weeks 0, 2, 4, 6 and 8. For the egg-production interval body weights were averaged over Weeks 8 and 20 (adult termination). The accuracy of the estimated mean daily dietary dose may be impacted by differences in individual feed consumption, both within and between pens, and feed wastage. The estimated daily dietary doses are presented in the table below.

Estimated Maximum Mean Daily Dietary Dose of H-28548
(mg/kg body weight/day)

Test Interval (test weeks)	Test Concentration (mg/kg)	Mean Body Weight (g)	Mean Feed Consumption (g/bird/day)	Estimated Daily Dietary Dose (mg/kg bw/day)
Pre-Egg Production (Weeks 1 – 9)	0	206	14	0.0
	100	204	13	6.5
	500	204	14	34.3
	1000	205	14	69.3
Egg Production (Weeks 10 – 20)	0	220	20	0.0
	100	217	21	9.5
	500	215	21	47.9
	1000	218	20	93.7
Over-all (Weeks 1 – 20)	0	210	17	0.0
	100	208	17	8.3
	500	207	18	42.6
	1000	209	18	84.5

6.13 Reproductive Results

There were no treatment-related effects upon reproductive performance at any tested concentrations. When compared to the control group, there were no statistically significant differences in any of the reproductive parameters measured in the 100, 500 or 1000 ppm treatment groups. Summaries of the reproductive data are presented in Tables 3 and 4, and in Figures 4 and 5. Reproductive parameters by pen are presented in Appendix VII and VIII.

6.14 Egg Shell Thickness

There were no apparent treatment related effects upon shell thickness at any of the concentrations tested. When compared to the control group, there were no statistically significant differences in shell thickness in the 100, 500 or 1000 ppm treatment groups. Egg shell thickness data are presented in Table 5 and Appendix IX.

6.15 Offspring Body Weights

There were no apparent treatment related effects upon offspring body weight at any tested concentrations. When compared to the control group, there were no statistically significant differences in the body weight of hatchlings or 14-day old survivors from the 100, 500 or 1000 ppm treatment groups. Offspring body weight data are presented in Table 6, and Appendices X and XI.

7.0 SUMMARY OF RESULTS

There were no treatment-related mortalities, overt signs of toxicity or treatment-related effects upon body weight or feed consumption at any tested concentrations. Additionally, there were no treatment-related effects upon reproductive performance parameters measured at the 100, 500 or 1000 ppm test concentrations. The no-observed-effect concentration (NOEC) for northern bobwhite quail exposed to H-28548 in the diet during this study was 1000 ppm (equivalent to 84.5 mg/kg/day), the highest nominal test concentration and the lowest observed effect concentration (LOEC) was > 1000 ppm (equivalent to > 84.5 mg/kg/day).

8.0 REFERENCES

1 **U.S. Environmental Protection Agency**. 1982. *Pesticide Assessment Guidelines, FIFRA Subdivision E, Hazard Evaluation: Wildlife and Aquatic Organisms*, subsection 71-4, Environmental Protection Agency, Office of Pesticide Programs. Washington, D.C.

2 **Organization for Economic Cooperation and Development.** 1984. *Avian Reproduction Test*. OECD Guideline for Testing of Chemicals. Guideline 206. Paris.

3 **American Society for Testing and Materials**. 1986. *Standard Practice for Conducting Reproductive Studies with Avian Species*. ASTM Standard E1062-86. Annual Book of ASTM Standards. Vol. 11.04. Philadelphia, PA. 15 pp.

4 **Merck & Co., Inc.** 1991. *The Merck Veterinary Manual.* Merck & Co. Rahway, NJ. 1832 pp.

5 **National Research Council.** 1996. *Guide for the Care and Use of Laboratory Animals.* Washington, DC. National Academy Press. 125 pp.

6 **Dunnett, C.W.** 1955. A Multiple Comparison's Procedure for Comparing Several Treatments with a Control. *Jour. Amer. Statis. Assoc*. 50: 1096-1121.

7 **Dunnett, C.W.** 1964. New Tables for Multiple Comparisons with a Control. *Biometrics* 20: 482-491.

8 **U.S. Environmental Protection Agency.** 1996. Series 850-Ecological Effects Test Guidelines *(draft*), OPPTS Number 850.2300: *Avian Reproduction Test*.

Table 1

Mean Adult Body Weight (g) from a Northern Bobwhite Reproduction Study with H-28548[1]

Experimental Group (ppm)	Sex	Week 0	Change Week 0-2	Week 2	Change Week 2-4	Week 4	Change Week 4-6	Week 6	Change Week 6-8	Week 8	Change Week 8-Term	Test Term	Total Change
Control	Male	201	5	206	1	207	0	208	2	210	2	213	11
	Female	200	4	205	2	206	0	207	4	210	36	248	47
100	Male	201	6	207	-2	205	1	206	2	208	0	207	6
	Female	198	5	204	-1	203	1	204	3	206	40	247	48
500	Male	202	3	205	1	206	2	208	2	210	1	211	9
	Female	198	2	200	1	200	2	203	5	207	22	230	32
1000	Male	202	6	207	-1	207	2	209	2	212	4	215	14
	Female	200	4	204	-1	202	1	203	2	205	36	241	41

The means for body weights and body weight changes are calculated and rounded separately.

Differences between control and each treatment group were not significant ($p > 0.05$).

[1] Only surviving birds were included in the calculations for each body weight interval.

Figure 1

Mean Adult Male Body Weight (g) from a Northern Bobwhite Reproduction Study with H-28548

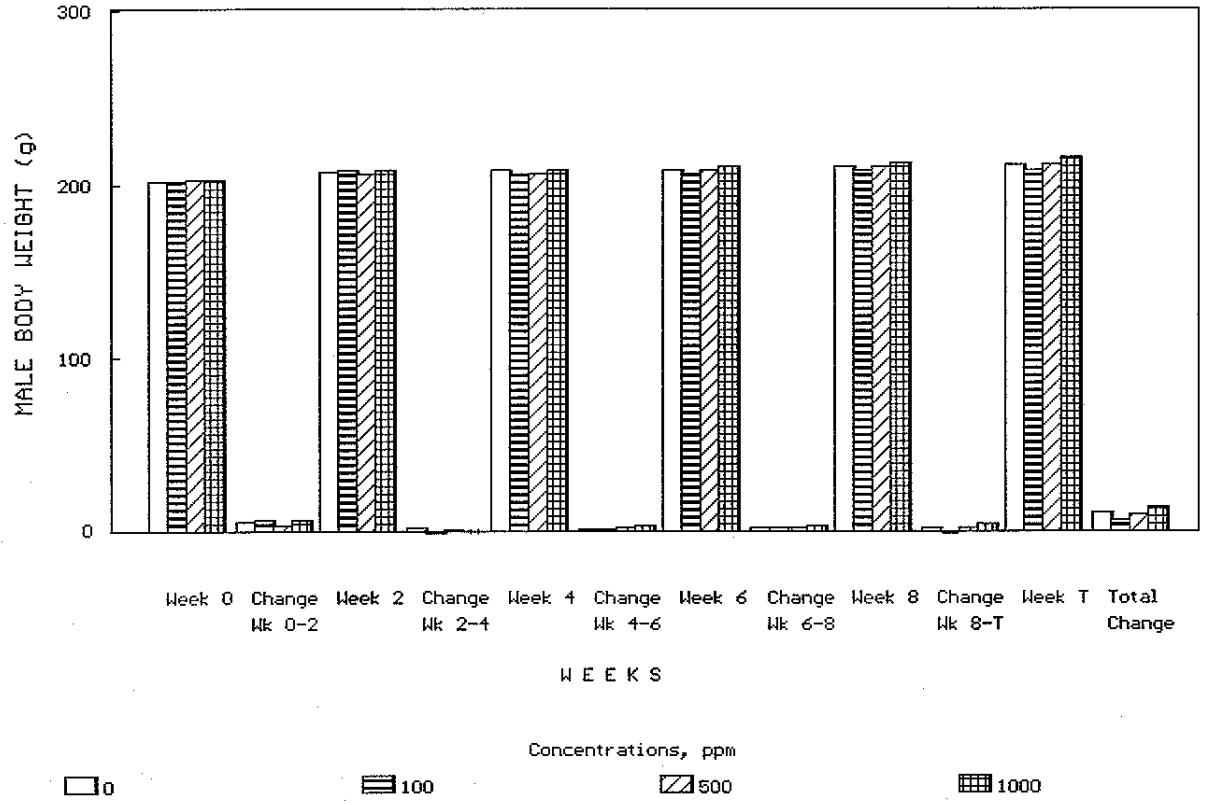


Figure 2

Mean Adult Female Body Weight (g) from a Northern Bobwhite Reproduction Study with H-28548

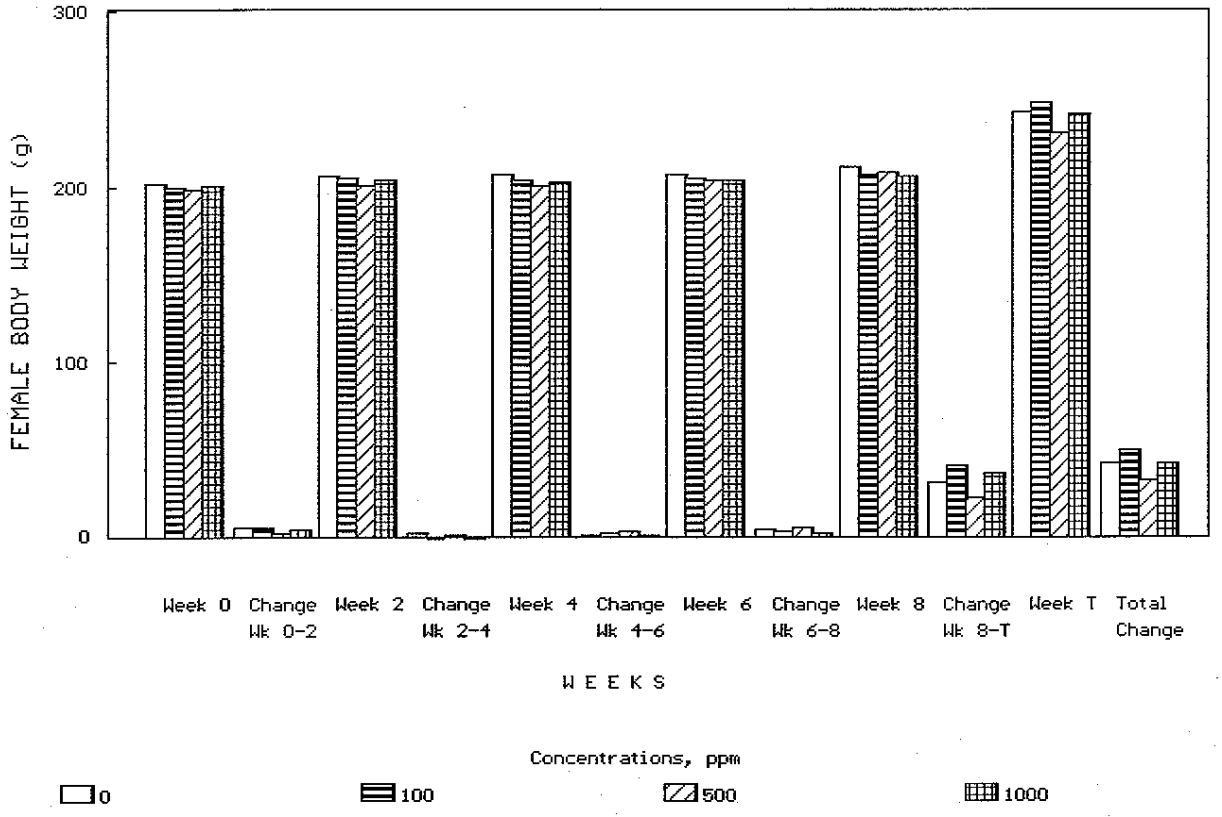


Table 2

Mean Feed Consumption (g/bird/day) from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)	WEEKS																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Control	13	13	13	14	14	13	13	16	15	16	17	18	19	20	21	21	22	23	22	22
100	12	13	12	14	14	13	13	15	14	16	17	18	20	21	22	22	22	23	23	23
500	13	13	14	15	14	13	13	16	15	16	17	18	20	20	22	22	23	23	23	22
1000	13	14	14	15	14	14	13	16	15	16	17	18	19	20	21	22	23	23	23	23

Differences between control and each treatment group were not significant ($p>0.05$).

Figure 3
Mean Feed Consumption (g/bird/day) from a Northern Bobwhite Reproduction Study with H-28548

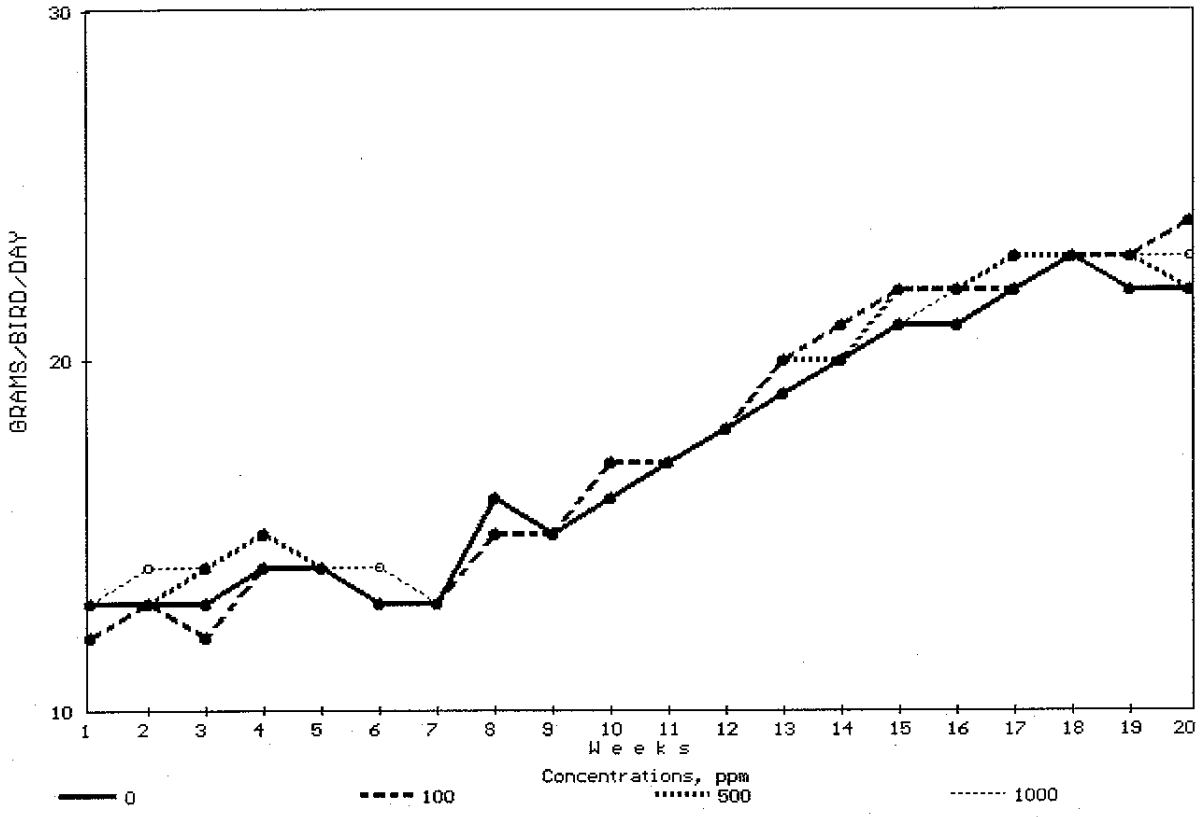


Table 3

Summary of Reproductive Performance from a Northern Bobwhite Reproduction Study with H-28548

	Experimental Group (ppm)			
Reproductive Parameter	Control	100	500	1000
Number of Replicates	15	16	16	16
Total Eggs Laid	647	780	688	658
Eggs Cracked	11	3	6	8
Eggs Set	567	699	611	579
Viable Embryos	548	634	560	545
Live 3-Week Embryos	542	632	559	538
Hatchlings	524	544	510	480
14-Day Old Survivors	489	505	480	454
Eggs Laid/Hen	43	49	43	41
Eggs Laid/Hen/Day[1]	0.47	0.54	0.47	0.45
14-Day Old Survivors/Hen	33	32	30	28

[1] Based on 91 days of eggs production.

Figure 4
Mean Reproductive Performance from a Northern Bobwhite Reproduction Study with H-28548

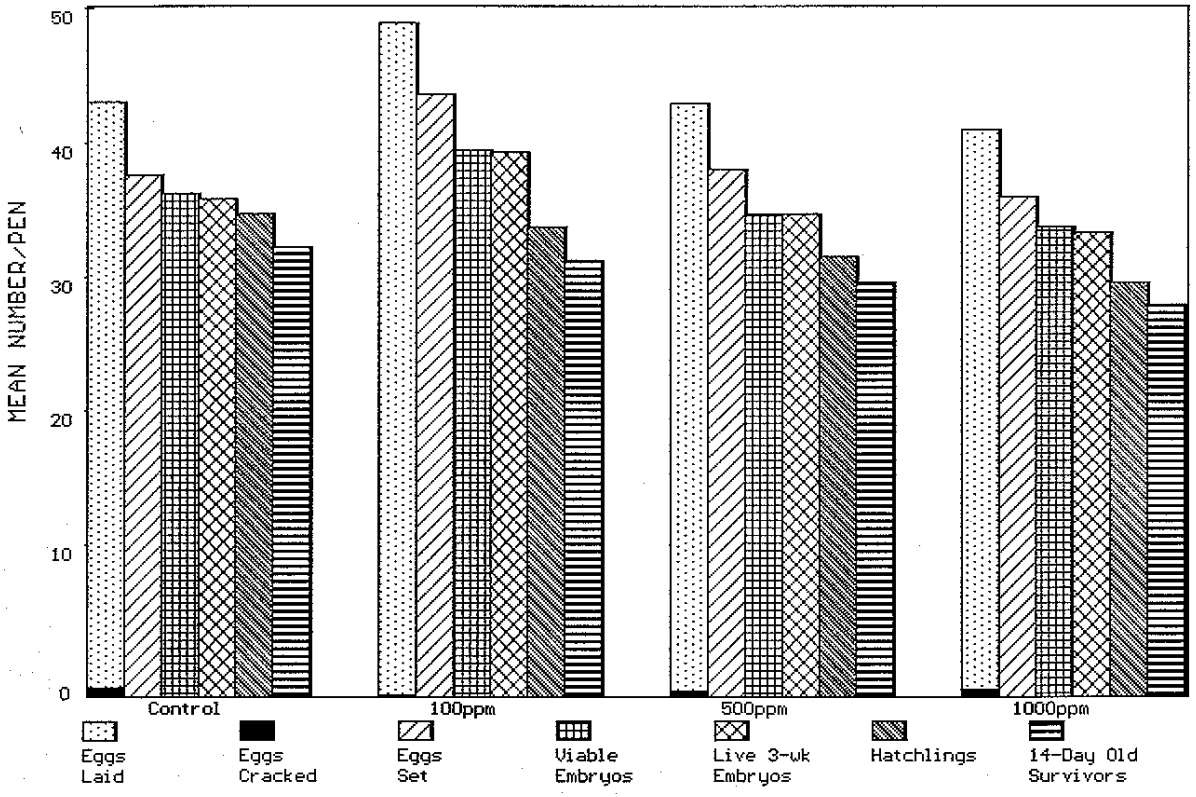


Table 4

Summary of Reproductive Performance, Normalized as Percentages (%)

from a Northern Bobwhite Reproduction Study with H-28548[1]

	Experimental Group (ppm)			
Reproductive Parameter	Control	100	500	1000
Number of Replicates	15	16	16	16
Total Eggs Laid[2]	647	780	688	658
Eggs Laid/Maximum Laid (%)	62	70	61	59
Eggs Cracked/Eggs Laid (%)	2	0	1	1
Viable Embryos/Eggs Set (%)	97	90	94	94
Live 3-Week Embryos/Viable Embryos (%)	99	100	100	99
Hatchlings/Live 3-Week Embryos (%)	95	86	91	89
14-Day Old Survivors/Hatchlings (%)	92	93	94	94
Hatchlings/Eggs Set (%)	91	78	86	83
14-Day Old Survivors/Eggs Set (%)	84	72	80	79
Hatchlings/Maximum Set (%)	55	54	51	48
14-Day Old Survivors/Maximum Set (%)	52	50	48	45

Differences between the control and each treatment groups were not significant ($p > 0.05$).

[1] Values represent pen means for experimental group. Values for each pen are presented in Appendices VII and VIII.

[2] Represents the total number of eggs laid in each group.

Figure 5
Mean Reproductive Performance, Normalized as Percentages (%),
from a Northern Bobwhite Reproduction Study with H-28548

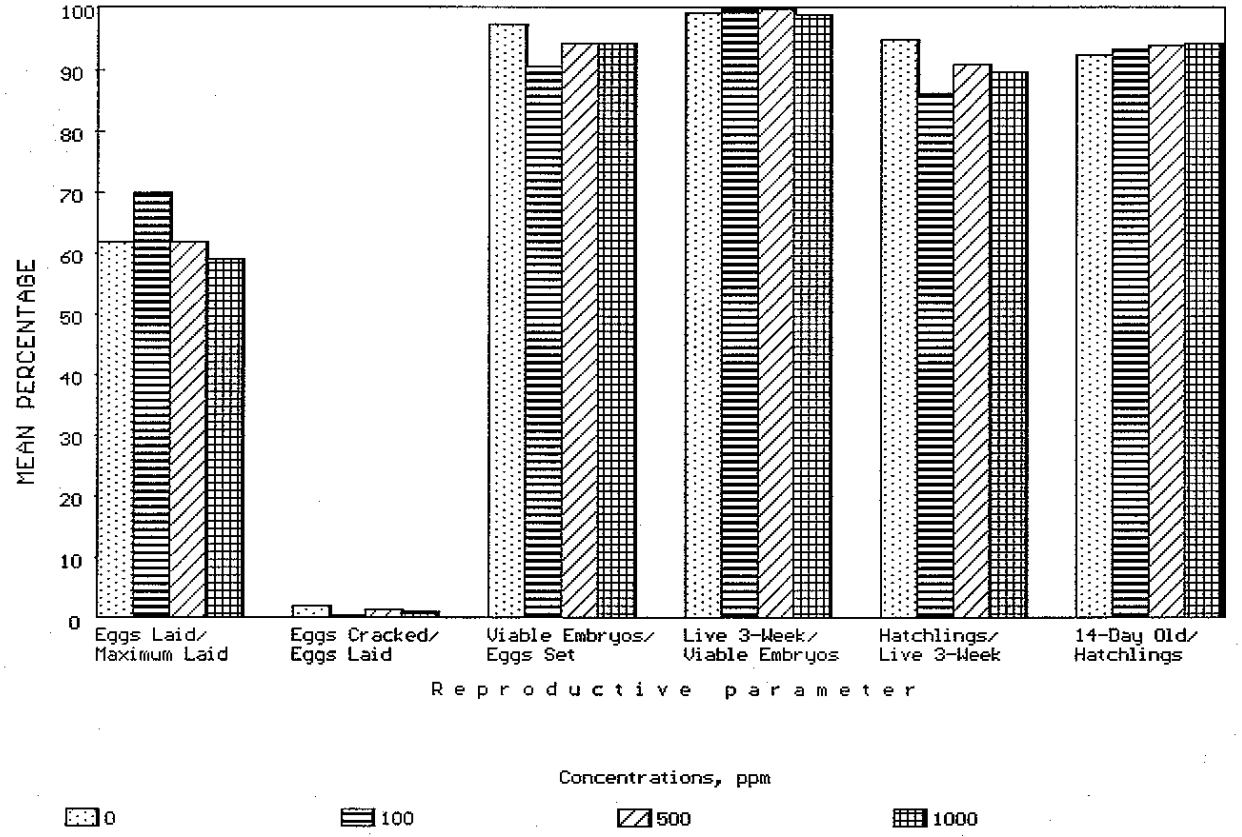


Table 5

Mean Eggshell Thickness Measurements (mm)

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)	No. Eggs Measured	Shell Thickness Mean (± SD)
Control	65	0.225 ± 0.010
100	72	0.234 ± 0.016
500	68	0.237 ± 0.015
1000	67	0.237 ± 0.017

Differences between the control and each treatment groups were not significant ($p > 0.05$).

Table 6

Mean Body Weight (g) of Hatchlings and 14-Day Old Survivors

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (PPM)	Hatchlings		14-Day Old Survivors	
	Number	Mean (± SD)	Number	Mean (± SD)
Control	523	6 ± 1	489	26 ± 3
100	543	6 ± 0	505	27 ± 2
500	509	6 ± 1	480	27 ± 2
1000	479	6 ± 0	454	27 ± 2

The number of hatchlings weighed may differ from the total number of hatchlings since those hatchlings found dead were not weighed.

Differences between the control and each treatment group were not significant ($p > 0.05$).

Table 7
Summary of Gross Pathological Observations
from a Northern Bobwhite Reproduction Study with H-28548
Birds Euthanized at Test Termination

	Males - Treatment Group (ppm)				Females - Treatment Group (ppm)			
	Control	100	500	1000	Control	100	500	1000
Number of birds	16	16	16	16	16	16	16	16
External - feather loss	2	4	2	2	12	11	9	9
External - small lesion near left eye	0	0	0	0	0	0	1	0
External - foot / leg lesions, swelling	1	1	2	0	0	1	4	2
External bump on head with caseous necrosis	0	0	0	0	0	1	0	0
External - head lesions	0	0	0	0	2	1	0	0
External - extensive head lesion	0	0	0	0	1	0	0	0
External - back and shoulder lesions	0	0	0	0	1	0	0	0
Musculoskeletal - some loss of muscle mass	0	0	0	0	1	0	0	0
Liver - slightly pale and/or slightly mottled	2	2	0	0	0	0	0	0
Liver - mottled	1	0	0	0	0	0	0	0
Liver - pale area on right lobe, ~ 0.5 x 0.1 cm	0	0	0	1	0	0	0	0
Liver - pale	1	0	0	0	0	0	0	0
Abdominal cavity - slight egg yolk peritonitis	0	0	0	0	0	0	1	0
Reproductive - ovary regressing	-	-	-	-	0	0	1	0
Reproductive - ovary regressed	-	-	-	-	1	0	1	0
Reproductive - right testis small, $\leq$ 1.5 cm	6	3	3	2	-	-	-	-
Reproductive - left testis small, ~ 1.5 cm	1	0	1	1	-	-	-	-
Not remarkable	6	8	10	12	3	5	4	7

Appendix I. Diet and Supplement Formulations

Table 1
Diet Formulation
WILDLIFE INTERNATIONAL, LTD. GAME BIRD RATION[1]

INGREDIENTS	PERCENT (%)
Fine Corn Meal	42.86
Soy Bean Meal, 47.5% Protein	33.39
Wheat Midds	6.48
Agway Special, 60% Protein	9.96
Alfalfa Meal, 20% Protein	3.00
Dried Whey	2.50
Ground Limestone	0.62
Eastman CalPhos	0.11
GL Ferm (Fermatco)[2]	0.25
Salt Iodized	0.10
CM T-Premix 561	0.05
CM TM Premix 434	0.08
CHO CHL 70%	0.09
Liquimeth 40%	0.25
Lysine 75%	0.06
DL Methionine 055	0.10
Vit K 16 g/lb 50#	0.05
Selenium	0.05
Total	100.00

VITAMIN AND MINERAL CONTENT	AMOUNT ADDED	
Vitamin D_3	0.600	kiu/lb
Vitamin A	2.000	kiu/lb
Riboflavin	2.1992	mg/lb
Niacin	21.6932	mg/lb
Pantothenic Acid	5.2241	mg/lb
Vitamin B_{12}	6.0000	ug/lb
Folic Acid	0.5169	mg/lb
Biotin	65.9360	ug/lb
Pyridoxine	1.4639	mg/lb
Thiamine	0.9200	mg/lb
Vitamin E	5.0000	iu/lb
Vitamin K (Menadione Dimethylpyrimidinol Bisulfite)	3.2400	mg/lb
Manganese	115.0203	mg/kg
Zinc	194.6601	mg/kg
Copper	24.3007	mg/kg
Iodine	2.4410	mg/kg
Iron	150.4117	mg/kg
Selenium	0.4749	mg/kg
Beta-Carotene	1.1413	mg/lb
Calcium	0.9750	%
Chloride	0.2164	%
Choline	1882.4116	mg/kg
Cobalt	0.1139	mg/kg
Magnesium	0.2503	%
Phos 30	0.3908	%
Phos 50	0.4719	%
Potassium	1.1148	%
Sodium	0.1335	%
Sulfur	0.3478	%
Phosphorus	0.6800	%
Ca:PHOS	1.4338	ratio

[1] The guaranteed analysis is a minimum of 27% protein, a minimum of 2.5% crude fat and a maximum of 3.8% crude fiber.
[2] Fermentation By-Products (Source of Unidentified Growth Factors)

Appendix I. Diet and Supplement Formulations

Table 2

Vitamins and Electrolytes Concentrate

Water Soluble Powder		
GUARANTEED ANALYSIS		
	Per 4 oz.	Per lb.
Vitamin A	2,500,000	10,000,000 IU
Vitamin D	1,000,000	4,000,000 ICU
Vitamin E	1,000	4,000 IU
Riboflavin	750	3,000 Mg
d-Pantothenic Acid	1,250	5,000 Mg
Niacin	2,500	10,000 Mg
Vitamin B-12	2.5	10.0 Mg
MSBC	1,000	4,000 Mg
Folic Acid	65	260 Mg
Thiamine HC1	250	1,000 Mg
Pyridoxine Hydrochloride	250	1,000 Mg
Ascorbic Acid	3,750	15,000 Mg

INGREDIENTS:
Vitamin A Supplement, D-Activated Animal Sterol (source of Vitamin D_3), Alpha Tocopheryl Acetate (source of Vitamin E). Riboflavin Supplement, d-Calcium Pantothenate, Niacin Supplement, Vitamin B-12 Supplement, Menadione Sodium Bisulfite (source of Vitamin K), Folic Acid, Thiamine HC1, Pyridoxine Hydrochloride, Ascorbic Acid, Sodium Chloride, Calcium Chloride, Magnesium Sulfate, Ferric Ammonium Citrate, Potassium Chloride and Dextrose.

MIXING PROCEDURE:
The vitamin and electrolyte mix was prepared as a ration of approximately 2 grams of Durvet vitamins and electrolytes to approximately 1 gallon of water.

Appendix II. Diet Preparation

Premixes for H-28548 were prepared on March 23, 2010, April 19, 2010, May 15, 2010, June 12, 2010, July 13, 2010 and July 20, 2010. Nominal preparation was as follows:

Control:	4018.00 g ration + 91 ml corn oil
100 ppm:	3.6900 g H-28548 + 4014.3 g ration + 91 ml corn oil
500 ppm:	18.4500 g H-28548 + 3999.6 g ration + 91 ml corn oil
1000 ppm:	36.9000 g H-28548 + 3981.1 g ration + 91 ml corn oil

For each of the premixes, the appropriate amount of H-28548 was weighed in a tared beaker on an analytical balance. The appropriate amount of basal ration was then weighed into a tared mixing bowl on a top-loading balance. Corn oil was measured in a graduated cylinder and was added to the basal ration in the mixing bowl. The basal ration and corn oil were mixed for approximately 10-15 minutes on a stand mixer. A portion of the basal ration and corn oil mixture was held for later use (retained ration).

The beaker containing the weighed H-28548 was then poured into the mixing bowl containing the basal ration and corn oil mix. The beaker was rinsed three times with some of the retained ration and the rinse was also added to the contents in the mixing bowl. Any remaining retained ration was then added to the mixing bowl and the contents were mixed for approximately 15-20 additional minutes.

After mixing, 1000.0 gram aliquots of the premix were weighed on a top-loading balance. Premixes not immediately used for preparation of the final diet were placed in appropriately labeled plastic bags, reweighed and stored frozen.

As needed, the appropriate premix was incorporated into the final diet as follows:

0 ppm:	1000 g Premix + 7.55 kg ration + 450 g limestone
100 ppm:	1000 g Premix + 7.55 kg ration + 450 g limestone
500 ppm:	1000 g Premix + 7.55 kg ration + 450 g limestone
1000 ppm:	1000 g Premix + 7.55 kg ration + 450 g limestone

The diet was mixed for approximately 10 minutes in a Hobart® mixer.

Appendix III Reproductive Parameters

1. Eggs Laid

   Definition - The number of eggs produced during the breeding season.

   Sensitivity - This is a parameter that is frequently affected by chemicals that cause reproductive impairment. It is also highly sensitive to the general conditions under which the test is conducted and may be adversely affected by improper diet, crowding, excessive disturbances, etc.

2. Eggs Cracked

   Definition - Eggs determined to have cracked shells when inspected with a candling lamp. Fine cracks cannot be detected without utilizing a candling lamp and, if undetected, will bias the data by adversely affecting embryo development.

   Sensitivity - This parameter is not frequently affected as cracking is directly related to shell thickness, and few chemicals have caused egg shell thinning. Improper pen design, overcrowding, and pecking by the birds can also increase egg cracking.

3. Eggs Set

   Definition - All eggs placed under incubation, i.e., total eggs laid minus cracked eggs, mechanically damaged eggs, and those selected for egg shell thickness analysis. The reason for presenting this parameter is to establish a base of reference for the following parameter - viable embryos.

4. Viable Embryos

   Definition - Eggs in which fertilization has occurred and embryonic development has begun. This is determined by candling the eggs 10-12 days after the initiation of incubation. It is difficult to distinguish between infertility and an early embryonic death.

   Sensitivity - This is a frequently affected parameter with infertility or embryonic mortality caused by an unfavorable environment for fertilization in the oviduct, impotent males, or chemical residue in the egg.

Appendix III Reproductive Parameters

5. Live Three-Week Embryos

   Definition - These are embryos that are developing normally after three weeks of incubation. This is determined by candling the eggs.

   Sensitivity - This parameter is seldom affected.

6. Hatchlings

   Definition - Embryos that mature, pip the shell, and liberate themselves from their eggs on Day 25 or 26 of incubation.

   Sensitivity - This is a frequently affected parameter which is also highly sensitive to the conditions of incubation, such as rate and angle of rotation, humidity, and temperature.

   - Humidity: If too dry, chicks will stick to their shells.

   - Temperature: If too hot and humid, chicks will grow too fast and be too large for their shells; thereby not having the intra-egg mobility necessary to pip their shells.

7. Body Weight - Hatchlings

   Definition - The average weight of hatchlings by parental pen of origin, taken immediately upon removal from the hatcher. Hatchlings from each weekly lot of eggs are weighed. Mean weight for each week and mean weight by pen are reported.

   Sensitivity - This is an occasionally affected parameter and may reflect some residual or latent toxic effects from chemical residue in the egg.

8. 14-Day Old Survivors

   Definition - Birds that survive brooding for two weeks following hatch.

   Sensitivity - This is a seldom affected parameter and is probably more indicative of the conditions under which the birds were reared in battery brooders than the chemical to which the adults were exposed.

Appendix III Reproductive Parameters

9. Body Weight - 14-Day Old Survivors

   Definition - The average body weight of the 14-day old survivors by parental pen of origin taken upon removal from the brooder unit at 14 days of age. Fourteen-day old survivors from each weekly lot of eggs are weighed. Mean weight for each week and mean weight by pen are reported.

   Sensitivity - This parameter is seldom affected, and more closely reflects the rearing practices utilized.

10. Egg Shell Thickness

    Definition - The thickness of the shell and the membrane of the egg at its equator after having been opened, washed, and dried for at least one week at room temperature. Egg shell thickness measurements are reported for each egg measured and for pen means.

    Sensitivity - This is a seldom affected parameter; however, measurements must be taken very carefully to ensure accuracy. Possible mechanical errors include membrane curling at the measurement surface, and calcium deposits on the measurement surface.

Appendix IV
Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548

Key to Codes and Abbreviations (Abb.)

Abb.	Definition
AN	Normal in appearance and behavior.
cAN	Considered AN
PS	Pair separated
S	Same - Remains as previous observation
3	Wing droop
11	Ruffled Appearance
BkL	Back lesion
FeL	Feather loss
Fra	Fractured
FtL	Foot lesion
HL	Head lesion
Lm	Lame or limping
NkL	Neck lesion
TH	Thin
VHC	Ventral head curl

Abb.	Definition
bf	both feet
fc	face
hd	head
lf	left foot
lw	left wing
re	right eye
rf	right foot
rw	right wing
bd	bandaged
bp	bump
br	bruising
hd	healed
he	healing
op	open
sl	slight (modifier)
sm	small
sut	sutured
sw	swollen
we	weeping

Appendix IV - Table 1a

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
Control - 0 ppm a.i.

Pen		Week 1							Week 2						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
401	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
402	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
403	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
404	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
405	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
406	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
407	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
408	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
409	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
410	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
411	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
412	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
413	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
414	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
415	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
416	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 1b

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
Control - 0 ppm a.i.

Pen		Week 3							Week 4						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
401	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
402	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
403	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
404	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
405	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
406	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
407	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
408	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
409	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
410	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
411	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
412	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
413	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
414	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
415	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
416	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 1c

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
Control - 0 ppm a.i.

Pen		Week 5							Week 6						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
401	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
402	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
403	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
404	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
405	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
406	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
407	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
408	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
409	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
410	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
411	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
412	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
413	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
414	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
415	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
416	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 1d

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
Control - 0 ppm a.i.

Pen		Week 7							Week 8						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
401	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
402	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
403	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
404	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
405	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
406	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
407	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
408	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
409	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
410	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
411	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
412	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
413	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
414	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
415	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
416	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 1e

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
Control - 0 ppm a.i.

Pen		Week 9							Week 10						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
401	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
402	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
403	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
404	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
405	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
406	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
407	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
408	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
409	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
410	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
411	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
412	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
413	M	AN	AN	AN	AN	AN	AN	AN	AN	FtL(bf),bd(bf)	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
414	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
415	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
416	M	AN	AN	AN	AN	AN	AN	AN	AN	FeL	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 1f

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
Control - 0 ppm a.i.

Pen		Week 11							Week 12						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
401	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
402	M	we(re)	S	S	S	S	S	S	cAN	AN	AN	AN	AN	AN	AN
	F	HL,sut	S	S	S	S	S	S	HL,sut	S	S	S	S	S	S
403	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
404	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
405	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
406	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
407	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
408	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	FeL
409	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
410	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
411	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
412	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
413	M	bd(bf)	S	S	S	S	S	S	bf,bd	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
414	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
415	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
416	M	FeL	S	S	S	S	FeL,HL,sm	S	HL,sm	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 1g

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
Control - 0 ppm a.i.

Pen		Week 13							Week 14						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
401	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
402	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL,sut	S	S	S	S	S	S	FeL	S	S	S	S	S	S
403	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
404	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
405	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
406	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
407	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
408	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S
409	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
410	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
411	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
412	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
413	M	bf,bd	S	S	S	S	S	S	bf,bd	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
414	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
415	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
416	M	HL,sm,he	S	S	S	S	S	S	HL,hel,FeL	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 1h

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
Control - 0 ppm a.i.

Pen		Week 15							Week 16						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
401	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
402	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	AN	AN	AN	AN	AN	AN	AN
403	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
404	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
405	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
406	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
407	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	FtL(rf),Lm,sl	S	S	S	S	S	FeL,(rf)bd
408	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S
409	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
410	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
411	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
412	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
413	M	bf,bd	S	S	S	S	S	S	bf,bd	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
414	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
415	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
416	M	HL,sm,he,FeL	S	S	S	S	S	S	HL,sm,he,FeL	S	S	S	S	S	HL,sm,he,FeL,Lm(sl)
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 1i

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
Control - 0 ppm a.i.

Pen		Week 17							Week 18						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
401	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
402	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
403	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
404	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
405	M	AN	AN	HL,he,br	S	S	S	S	HL(hd),FeL	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
406	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
407	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL,(rf)bd	S	S	S	S	S	S	FeL,(rf)sw	S	S	S	S	S	S
408	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	AN	AN	AN	AN	AN	AN
409	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
410	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
411	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
412	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
413	M	bf,bd	S	S	S	S	S	S	bf,bd	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
414	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
415	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
416	M	FeL,Lm(rl)	S	S	S	S	S	S	FeL,Lm(rl)	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 1j

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
Control - 0 ppm a.i.

Pen		Week 19							Week 20							
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
401	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
402	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
403	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
404	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
405	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
406	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
407	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	(rf)sw	S	S	S	S	S	S	(rf)sw	S	S	S	S	S	S	S
408	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S	S
409	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
410	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
411	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
412	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
413	M	bf,bd	S	S	S	S	S	S	bf,bd	S	S	S	PS	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	NkL(sut)	S	S	S	HL(op),BkL,PS	S	S	S
414	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
415	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
416	M	cAN	S	S	S	S	S	S	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 2a

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
100 ppm a.i.

Pen		Week 1							Week 2						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
417	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
418	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
419	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
420	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
421	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
422	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
423	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
424	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
425	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
426	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
427	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
428	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
429	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
430	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
431	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
432	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 2b

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
100 ppm a.i.

Pen		Week 3							Week 4						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
417	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
418	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
419	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
420	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
421	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
422	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
423	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
424	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
425	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
426	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
427	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
428	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
429	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
430	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
431	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
432	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 2c

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
100 ppm a.i.

Pen		Week 5							Week 6						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
417	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
418	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
419	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
420	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
421	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
422	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
423	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
424	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
425	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	FeL	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
426	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
427	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	FeL	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
428	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
429	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
430	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
431	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
432	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 2d

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
100 ppm a.i.

Pen		Week 7							Week 8						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
417	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
418	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	HL
419	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	HL(op),sut
420	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
421	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
422	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	HL
423	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
424	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
425	M	cAN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
426	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	HL(sm)
427	M	FeL	S	S	S	S	S	S	cAN	AN	AN	AN	AN	AN	HL(sm)
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
428	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
429	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
430	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
431	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
432	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 2e

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
100 ppm a.i.

Pen		Week 9							Week 10						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
417	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	FeL,br,hd	S	S	S	S	S	S
418	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL,br(hd),HL	S	S	S	S	S	S	FeL,br(hd),HL	S	S	S	S	S	S
419	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL,br(hd),sut HL	S	S	S	S	S	S	FeL,br(hd),sut HL	S	S	S	S	S	S
420	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
421	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	HL,sm,br	S	S	S	FeL,HL(sm),br(hd)	S	S	S	S	S	S
422	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL,br(hd),HL	S	S	S	S	S	S	FeL,br(hd),HL,sut	S	S	S	S	S	S
423	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
424	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
425	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	HL,sm	S	FeL,HL,sm	S	S	S	S	S	S
426	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
427	M	FeL,br(hd),HL,sm	S	S	S	S	S	S	FeL,br(hd),HL,sm	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
428	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
429	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
430	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
431	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
432	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 2f

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
100 ppm a.i.

Pen		Week 11							Week 12						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
417	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	cAN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
418	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL,sut	S	S	S	S	S	S	HL,sut	S	S	S	S	S	S
419	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL,sut	S	S	S	S	S	S	HL,sut	S	S	S	S	S	S
420	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
421	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	cAN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
422	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL,op	S	S	S	S	S	S	HL,sut	S	S	S	S	S	S
423	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
424	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
425	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL,br(hd),HL,sm	S	S	S	S	S	S	HL,sm,he	S	S	S	S	S	S
426	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
427	M	HL,sut	S	S	S	S	S	S	HL,sut	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
428	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	FeL	S
429	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
430	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
431	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
432	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 2g

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
100 ppm a.i.

Pen		Week 13							Week 14						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
417	M	AN	AN	AN	AN	AN	AN	FtL(rf)	FtL,rf	rf,bd	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
418	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL,sut	S	S	S	S	S	S	HL,sut	S	S	S	S	S	S
419	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL,sut	S	S	S	S	S	S	HL,sut	S	S	S	S	S	S
420	M	FtL(lf)	S	S	S	S	lf,bd	S	lf,bd	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
421	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
422	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL,sut	S	S	S	S	S	S	HL,sut	S	S	S	S	S	S
423	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
424	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
425	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL,he	S	S	S	S	S	S	HL,he	S	S	S	S	S	S
426	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
427	M	HL,sut	S	S	S	S	S	S	HL,sut	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
428	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S
429	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
430	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
431	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	HL,sut	S	S	S	S	S	S
432	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 2h

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
100 ppm a.i.

Pen		Week 15							Week 16						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
417	M	rf,bd	S	S	S	S	S	rf,bd	rf,bd,Lm	S	S	S	S	S	bf,bd
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
418	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL,sut	S	S	S	S	S	S	HL,sut	S	S	S	S	S	S
419	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL,sut	S	S	S	S	S	S	HL,sut	S	S	S	S	S	S
420	M	lf,bd	S	S	S	S	S	S	lf,bd	cAN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
421	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S
422	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL,sut	S	S	S	S	S	S	HL,sut	S	S	S	S	S	S
423	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
424	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
425	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL,he	S	S	S	S	S	S	HL,he	S	S	S	S	S	S
426	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
427	M	HL,sut	S	S	S	S	S	S	HL,sut	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
428	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S
429	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
430	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
431	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL,sut	S	S	S	S	S	S	HL,sut	S	S	S	S	S	S
432	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 2i

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
100 ppm a.i.

Pen		Week 17							Week 18						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
417	M	bf,bd	S	S	S	S	S	S	bf,bd	S	S	S	S	S	lf(bd)FtL(rf)
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
418	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	cAN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
419	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	cAN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
420	M	AN	Lm	S	S	S	S	S	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
421	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S
422	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL,sut	S	HL	S	S	S	S	HL(op)	S	S	S	S	S	S
423	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
424	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
425	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL,he	S	S	S	S	S	S	cAN	AN	AN	AN	AN	AN	AN
426	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
427	M	FeL,br(hd)	S	S	S	S	S	S	FeL	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	FeL	S	S	S	S	S	S
428	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S
429	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
430	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
431	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	cAN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
432	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 2j

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
100 ppm a.i.

Pen		Week 19							Week 20							
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
417	M	lf(bd)FtL(rf)	S	S	S	S	S	S	lf(bd),Lm	S	S	lf(bd)FtL(rf),Lm	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
418	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
419	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
420	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
421	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S	S
422	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL(op)	S	S	S	S	S	S	HL,(he)	S	S	S	S	S	S	S
423	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
424	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
425	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
426	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
427	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S	S
428	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S	S
429	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
430	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
431	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
432	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 3a

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
500 ppm a.i.

Pen		Week 1							Week 2						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
433	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
434	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
435	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
436	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
437	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
438	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
439	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
440	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
441	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
442	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
443	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
444	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
445	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
446	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
447	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
448	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 3b

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
500 ppm a.i.

Pen		Week 3							Week 4						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
433	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
434	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
435	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	3(lw)	S	S	S	S	S	3(lw)	S	S	S	S	S	S
436	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
437	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
438	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
439	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
440	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	S	S	S	S	cAN	AN
441	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
442	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
443	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
444	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
445	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
446	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
447	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
448	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 3c

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
500 ppm a.i.

Pen		Week 5							Week 6						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
433	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
434	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
435	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	3(lw)	S	S	S	S	S	S	3(lw)	S	S	S	S	S	S
436	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
437	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S
438	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
439	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
440	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S
441	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
442	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
443	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
444	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
445	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
446	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
447	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
448	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 3d

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
500 ppm a.i.

Pen		Week 7							Week 8						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
433	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
434	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
435	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	3(lw)	S	S	S	S	S	S	3(lw)	S	S	S	S	S	S
436	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
437	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	cAN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	FeL	S
438	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
439	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
440	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	cAN	AN	AN	AN	AN	AN	AN
441	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
442	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
443	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
444	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
445	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
446	M	AN	AN	AN	AN	AN	AN	AN	FeL	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
447	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
448	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 3e

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
500 ppm a.i.

Pen		Week 9							Week 10						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
433	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
434	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
435	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	3(lw)	S	S	S	S	S	S	3(lw)	S	S	S	S	S	S
436	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
437	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL,br(hd)	S	S	S	S	S	S	FeL	S	S	S	S	S	S
438	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
439	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
440	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
441	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL,br(hd)	S	S	S	S	S	S	FeL	S	S	S	S	S	S
442	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
443	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
444	M	FeL,br(hd),HL(sm)	S	S	S	S	S	S	cAN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
445	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
446	M	FeL	S	S	S	S	S	S	FeL,br(hd)	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
447	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
448	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 3f

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
500 ppm a.i.

Pen		Week 11							Week 12						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
433	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
434	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
435	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	3(lw)	S	S	S	S	S	S	3(lw)	S	S	S	S	S	S
436	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
437	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	cAN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	FtL(rf)sm
438	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
439	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
440	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	FeL	S
441	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	cAN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
442	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
443	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
444	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
445	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
446	M	FeL	S	S	S	S	S	S	FeL	S	S	S	S	cAN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
447	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
448	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 3g

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
500 ppm a.i.

Pen		Week 13							Week 14						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
433	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
434	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
435	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	3(lw)	S	S	S	S	S	S	3(lw)	S	S	S	S	S	S
436	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
437	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FtL,rf	S	S	S	S	S	S	FtL,rf	S	S	S	S	bd(rf)	S
438	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
439	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
440	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S
441	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
442	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
443	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
444	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
445	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
446	M	AN	AN	AN	AN	AN	FeL(sl)	S	FeL(sl)	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
447	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
448	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 3h

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
500 ppm a.i.

Pen		Week 15							Week 16						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
433	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
434	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
435	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	3(lw)	S	S	S	S	S	S	3(lw)	S	S	S	S	S	S
436	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
437	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	rf,bd	S	S	S	S	S	S	rf,bd	S	S	S	S	S	S
438	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
439	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
440	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	FeL,bp(hd)	FeL,bp(hd)	S	S	S	S	S	S
441	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
442	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
443	M	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
444	M	AN	AN	AN	AN	AN	AN	AN	HL,br	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
445	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
446	M	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
447	M	AN	AN	AN	AN	AN	AN	AN	Fra(lf),Lm(sl),sw	S	lf,bd	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
448	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 3i

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
500 ppm a.i.

Pen		Week 17							Week 18						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
433	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
434	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
435	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	3(lw)	S	S	S	S	S	S	3(lw)	S	S	S	S	S	S
436	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
437	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	rf,bd	S	S	S	S	S	FtL(rf)	FtL(rf)	S	S	S	S	S	cAN
438	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
439	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
440	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL,bp(hd)	S	S	S	S	S	S	FeL,bp(hd)	S	S	S	S	S	S
441	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
442	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
443	M	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
444	M	HL	S	S	S	S	S	S	cAN	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
445	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
446	M	cAN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	FeL	S
447	M	lf,bd	S	S	S	S	S	S	lf,bd	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
448	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 3j

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
500 ppm a.i.

Pen		Week 19							Week 20							
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
433	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
434	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
435	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	3(lw)	S	S	S	S	S	S	3(lw)	S	S	S	S	S	S	S
436	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S	S
437	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S	S
438	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
439	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	FtL,rf	FtL,rf,Lm	S	S	S
440	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	FtL,bf,Lm	S	S	S
	F	FeL,bp(hd)	S	S	S	S	S	S	FeL,bp(hd)	S	S	S	S	S	S	S
441	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
442	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
443	M	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
444	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
445	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	FtL(rf)	FtL(bf),bd	S	bf(bd),TH,Lm	S+11	S	S	S
446	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
447	M	lf,bd	S	S	S	S	S	cAN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
448	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 4a

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
1000 ppm a.i.

Pen		Week 1							Week 2						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
449	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
450	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
451	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
452	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
453	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
454	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
455	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
456	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
457	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
458	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
459	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
460	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
461	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
462	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
463	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
464	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 4b

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
1000 ppm a.i.

Pen		Week 3							Week 4						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
449	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
450	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
451	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
452	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
453	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
454	M	AN	AN	AN	AN	AN	AN	AN	AN	sl VHC	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
455	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
456	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
457	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
458	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
459	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
460	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
461	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
462	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
463	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
464	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 4c

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
1000 ppm a.i.

Pen		Week 5							Week 6						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
449	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
450	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
451	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	FeL	S	FeL	S	S	S	S	S	S
452	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
453	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
454	M	sl VHC	S	S	S	S	S	S	sl VHC	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
455	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
456	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
457	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
458	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
459	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
460	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	FeL	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
461	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
462	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
463	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
464	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 4d

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
1000 ppm a.i.

Pen		Week 7							Week 8						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
449	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
450	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
451	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	cAN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
452	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
453	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
454	M	sl VHC	S	S	S	S	S	S	VHC	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
455	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
456	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
457	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
458	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
459	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
460	M	cAN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
461	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
462	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
463	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
464	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 4e

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
1000 ppm a.i.

Pen		Week 9							Week 10						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
449	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
450	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL,HL,sm(br)hd	S	S	S	S	S	S	cAN	AN	AN	AN	AN	AN	AN
451	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	AN	AN	AN	AN	AN	AN	FeL	S	S	S	S	S	S
452	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
453	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
454	M	VHC	S	S	S	S	S	S	VHC,sl	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
455	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
456	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	FeL	S	S	AN	AN	AN	AN	AN	AN	AN
457	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
458	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
459	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
460	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
461	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL,HL(br)hd	S	S	S	S	S	S	FeL,br(hd),HL	S	S	S	S	S	S
462	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
463	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL,br(hd)	S	S	S	S	S	S	cAN	AN	AN	AN	AN	AN	AN
464	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 4f

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
1000 ppm a.i.

Pen		Week 11							Week 12						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
449	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
450	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
451	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	cAN	AN	AN	AN	AN	AN	AN
452	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	FeL	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
453	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
454	M	VHC,sl	S	S	S	S	S	S	VHC,sl	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
455	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
456	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL,sut	S	S	S	S	S	S	HL,sut	S	S	S	S	S	S
457	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	FtL,lf	S
458	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
459	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
460	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
461	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL,sut	S	S	S	S	S	S	HL,sut	S	S	S	S	S	S
462	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
463	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
464	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 4g

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
1000 ppm a.i.

Pen		Week 13							Week 14						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
449	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
450	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
451	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
452	M	AN	AN	AN	AN	FeL	S	S	FeL	FeL,fe,sl,sw	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
453	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
454	M	VHC,sl	S	S	S	S	S	S	VHC,sl	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
455	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
456	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL,sut	S	S	S	S	S	S	cAN	AN	AN	AN	AN	AN	AN
457	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FtL,lf,sm	S	S	S	S	S	S	FtL,lf,sm	S	S	S	S	S	S
458	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
459	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
460	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
461	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	HL,sut	S	S	S	S	S	S	FeL	S	S	S	S	S	S
462	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
463	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
464	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 4h

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
1000 ppm a.i.

Pen		Week 15							Week 16						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
449	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
450	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
451	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
452	M	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
453	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
454	M	VHC,sl	S	S	S	S	S	S	VHC,sl	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
455	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
456	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
457	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FtL,lf,sm	S	S	S	S	S	S	FtL,lf,sm	S	S	S	S	S	S
458	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
459	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
460	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
461	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S
462	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
463	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
464	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 4i

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
1000 ppm a.i.

Pen		Week 17							Week 18						
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
449	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
450	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
451	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
452	M	FeL	S	S	S	S	S	S	FeL,hd(sw)	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
453	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
454	M	VHC,sl	S	S	S	S	S	S	VHC,sl	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
455	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
456	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
457	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FtL,lf,sm	S	S	S	S	S	S	AN	AN	AN	AN	AN	AN	AN
458	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
459	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
460	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
461	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL(3)rw	S	FeL,sl(3)rw	S	S	S	S	FeL,sl(3)rw	S	S	S	S	S	S
462	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
463	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
464	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix IV - Table 4j

Daily Clinical Observations from a N. Bobwhite Reproduction Study with H-28548
1000 ppm a.i.

Pen		Week 19							Week 20							
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
449	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
450	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
451	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	FeL	S
452	M	FeL,hd(sw)	S	S	S	S	S	S	FeL,hd(sw)	S	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
453	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
454	M	VHC,sl	S	S	S	S	S	S	VHC,sl	S	S	S	S	S	S	S
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
455	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
456	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
457	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
458	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
459	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
460	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
461	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL,sl(3)rw	FeL	S	S	S	S	S	FeL,sl(3)	S	S	S	S	S	S	S
462	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	FeL	S	S	S	S	S	S	FeL	S	S	S	S	S	S	S
463	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
464	M	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
	F	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN

AN - Appears normal; other observation codes - see Key.

Appendix V - Table 1

Adult Body Weight (g) from a Northern Bobwhite Reproduction Study with H-28548

(Control, Males)

Pen	Week 0	Change Week 0-2	Week 2	Change Week 2-4	Week 4	Change Week 4-6	Week 6	Change Week 6-8	Week 8	Change Week 8-Term	Test Term	Total Change
401	217	6	223	4	227	2	229	1	230	-2	228	11
402	199	1	200	-1	199	-4	195	7	202	19	221	22
403	177	2	179	6	185	1	186	5	191	-1	190	13
404	240	8	248	4	252	1	253	2	255	-15	240	0
405	204	6	210	1	211	-1	210	-4	206	-8	198	-6
406	226	2	228	2	230	1	231	-1	230	8	238	12
407	193	4	197	2	199	1	200	5	205	-7	198	5
408	189	6	195	1	196	-1	195	2	197	-2	195	6
409	202	12	214	-3	211	-2	209	-11	198	26	224	22
410	176	6	182	2	184	1	185	5	190	0	190	14
411	193	0	193	-2	191	-1	190	5	195	5	200	7
412	194	6	200	2	202	0	202	2	204	5	209	15
413	178	5	183	-1	182	2	184	3	187	-	-	-
414	222	4	226	0	226	3	229	7	236	8	244	22
415	199	4	203	1	204	-1	203	4	207	-5	202	3
416	207	10	217	0	217	2	219	2	221	1	222	15
Mean	201	5	206	1	207	0	208	2	210	2	213	11
SD	18	3	19	2	19	2	20	5	19	10	19	8

The means for body weights and body weight changes are calculated and rounded separately.
- Data are not available due to adult mortality.

Appendix V - Table 2

Adult Body Weight (g) from a Northern Bobwhite Reproduction Study with H-28548

(Control, Females)

Pen	Week 0	Change Week 0-2	Week 2	Change Week 2-4	Week 4	Change Week 4-6	Week 6	Change Week 6-8	Week 8	Change Week 8-Term	Test Term	Total Change
401	191	0	191	4	195	3	198	-1	197	52	249	58
402	217	5	222	1	223	-1	222	4	226	38	264	47
403	186	1	187	1	188	-2	186	4	190	20	210	24
404	220	7	227	4	231	0	231	-4	227	33	260	40
405	205	2	207	1	208	1	209	1	210	51	261	56
406	199	7	206	2	208	-2	206	4	210	49	259	60
407	187	0	187	-1	186	2	188	6	194	20	214	27
408	177	3	180	4	184	-1	183	0	183	45	228	51
409	206	7	213	2	215	1	216	4	220	48	268	62
410	218	4	222	1	223	-1	222	2	224	34	258	40
411	193	5	198	2	200	0	200	8	208	53	261	68
412	222	8	230	6	236	4	240	12	252	14	266	44
413	192	5	197	0	197	-1	196	3	199	-	-	-
414	192	3	195	1	196	2	198	13	211	28	239	47
415	189	4	193	-1	192	0	192	3	195	23	218	29
416	213	8	221	-2	219	0	219	1	220	38	258	45
Mean	200	4	205	2	206	0	207	4	210	36	248	47
SD	14	3	16	2	17	2	17	4	18	13	20	13

The means for body weights and body weight changes are calculated and rounded separately.
- Data are not available due to adult mortality.

Appendix V - Table 3

Adult Body Weight (g) from a Northern Bobwhite Reproduction Study with H-28548

(100 PPM, Males)

Pen	Week 0	Change Week 0-2	Week 2	Change Week 2-4	Week 4	Change Week 4-6	Week 6	Change Week 6-8	Week 8	Change Week 8-Term	Test Term	Total Change
417	203	9	212	-2	210	4	214	8	222	-41	181	-22
418	210	2	212	2	214	1	215	-3	212	3	215	5
419	209	7	216	0	216	1	217	1	218	1	219	10
420	183	8	191	-4	187	0	187	3	190	-1	189	6
421	209	5	214	-5	209	2	211	-1	210	0	210	1
422	204	7	211	-2	209	0	209	-4	205	7	212	8
423	213	1	214	0	214	1	215	3	218	-9	209	-4
424	201	6	207	-1	206	0	206	1	207	-6	201	0
425	180	5	185	-3	182	2	184	2	186	-1	185	5
426	190	5	195	-2	193	-1	192	6	198	2	200	10
427	192	5	197	-3	194	4	198	2	200	-7	193	1
428	232	5	237	-3	234	1	235	-5	230	-5	225	-7
429	197	3	200	-2	198	3	201	6	207	17	224	27
430	204	6	210	-4	206	-6	200	5	205	25	230	26
431	172	8	180	-4	176	-1	175	2	177	-4	173	1
432	222	9	231	1	232	0	232	3	235	12	247	25
Mean	201	6	207	-2	205	1	206	2	208	0	207	6
SD	15	2	15	2	16	2	16	4	15	14	20	13

The means for body weights and body weight changes are calculated and rounded separately.
Differences between control and this treatment group were not significant ($p>0.05$).

Appendix V - Table 4

Adult Body Weight (g) from a Northern Bobwhite Reproduction Study with H-28548

(100 PPM, Females)

Pen	Week 0	Change Week 0-2	Week 2	Change Week 2-4	Week 4	Change Week 4-6	Week 6	Change Week 6-8	Week 8	Change Week 8-Term	Test Term	Total Change
417	214	13	227	1	228	1	229	8	237	37	274	60
418	190	5	195	0	195	0	195	1	196	51	247	57
419	205	6	211	0	211	0	211	-2	209	56	265	60
420	196	5	201	0	201	-2	199	-1	198	61	259	63
421	192	2	194	1	195	3	198	-2	196	28	224	32
422	202	6	208	0	208	0	208	2	210	52	262	60
423	181	6	187	-1	186	1	187	4	191	25	216	35
424	212	4	216	-3	213	1	214	-2	212	47	259	47
425	197	6	203	-2	201	1	202	3	205	43	248	51
426	192	5	197	-4	193	4	197	2	199	37	236	44
427	205	3	208	-1	207	3	210	3	213	33	246	41
428	196	3	199	0	199	4	203	2	205	22	227	31
429	199	5	204	-2	202	2	204	2	206	63	269	70
430	194	7	201	-1	200	1	201	16	217	35	252	58
431	195	4	199	-3	196	4	200	0	200	23	223	28
432	203	5	208	-2	206	-2	204	4	208	31	239	36
Mean	198	5	204	-1	203	1	204	3	206	40	247	48
SD	8	2	10	1	10	2	9	4	11	13	18	13

The means for body weights and body weight changes are calculated and rounded separately.
Differences between control and this treatment group were not significant ($p>0.05$).

Appendix V - Table 5

Adult Body Weight (g) from a Northern Bobwhite Reproduction Study with H-28548

(500 PPM, Males)

Pen	Week 0	Change Week 0-2	Week 2	Change Week 2-4	Week 4	Change Week 4-6	Week 6	Change Week 6-8	Week 8	Change Week 8-Term	Test Term	Total Change
433	192	5	197	1	198	4	202	4	206	-1	205	13
434	197	5	202	-1	201	2	203	-1	202	-4	198	1
435	209	-1	208	0	208	1	209	1	210	4	214	5
436	213	3	216	1	217	5	222	-2	220	-20	200	-13
437	202	-1	201	1	202	0	202	5	207	9	216	14
438	201	2	203	7	210	0	210	4	214	-3	211	10
439	198	2	200	8	208	-4	204	6	210	7	217	19
440	213	1	214	0	214	3	217	6	223	-18	205	-8
441	193	5	198	0	198	5	203	4	207	5	212	19
442	242	6	248	-1	247	6	253	4	257	-14	243	1
443	191	5	196	-3	193	4	197	3	200	4	204	13
444	208	5	213	-2	211	3	214	8	222	13	235	27
445	208	4	212	0	212	3	215	-2	213	-9	204	-4
446	181	2	183	-1	182	1	183	0	183	11	194	13
447	178	0	178	-1	177	-1	176	-1	175	5	180	2
448	205	7	212	-1	211	2	213	-10	203	30	233	28
Mean	202	3	205	1	206	2	208	2	210	1	211	9
SD	15	3	16	3	16	3	17	4	18	13	16	12

The means for body weights and body weight changes are calculated and rounded separately.
Differences between control and this treatment group were not significant ($p>0.05$).

Appendix V - Table 6

Adult Body Weight (g) from a Northern Bobwhite Reproduction Study with H-28548

(500 PPM, Females)

Pen	Week 0	Change Week 0-2	Week 2	Change Week 2-4	Week 4	Change Week 4-6	Week 6	Change Week 6-8	Week 8	Change Week 8-Term	Test Term	Total Change
433	207	3	210	-1	209	0	209	7	216	48	264	57
434	188	9	197	2	199	3	202	4	206	44	250	62
435	200	-4	196	4	200	1	201	10	211	36	247	47
436	192	3	195	3	198	-3	195	7	202	26	228	36
437	190	5	195	-7	188	5	193	2	195	8	203	13
438	205	4	209	1	210	5	215	12	227	26	253	48
439	197	-7	190	6	196	5	201	7	208	-22	186	-11
440	201	1	202	2	204	3	207	-2	205	28	233	32
441	205	4	209	2	211	3	214	0	214	32	246	41
442	207	0	207	0	207	3	210	3	213	36	249	42
443	197	-1	196	5	201	2	203	5	208	20	228	31
444	202	0	202	-1	201	-2	199	8	207	14	221	19
445	189	4	193	0	193	5	198	5	203	-53	150	-39
446	198	2	200	-1	199	1	200	-4	196	33	229	31
447	194	5	199	-2	197	4	201	5	206	48	254	60
448	189	4	193	-2	191	3	194	4	198	33	231	42
Mean	198	2	200	1	200	2	203	5	207	22	230	32
SD	7	4	6	3	7	2	7	4	8	26	29	26

The means for body weights and body weight changes are calculated and rounded separately.
Differences between control and this treatment group were not significant ($p > 0.05$).

Appendix V - Table 7

Adult Body Weight (g) from a Northern Bobwhite Reproduction Study with H-28548

(1000 PPM, Males)

Pen	Week 0	Change Week 0-2	Week 2	Change Week 2-4	Week 4	Change Week 4-6	Week 6	Change Week 6-8	Week 8	Change Week 8-Term	Test Term	Total Change
449	199	2	201	3	204	1	205	6	211	13	224	25
450	201	8	209	0	209	-1	208	9	217	-3	214	13
451	212	3	215	1	216	2	218	3	221	1	222	10
452	201	3	204	0	204	0	204	3	207	-10	197	-4
453	202	9	211	-1	210	-1	209	3	212	-2	210	8
454	185	6	191	-1	190	-1	189	-1	188	-5	183	-2
455	218	9	227	0	227	0	227	0	227	7	234	16
456	226	6	232	0	232	6	238	1	239	19	258	32
457	219	8	227	-1	226	1	227	3	230	4	234	15
458	191	4	195	0	195	2	197	5	202	7	209	18
459	192	5	197	-1	196	2	198	6	204	0	204	12
460	206	10	216	-2	214	2	216	1	217	15	232	26
461	187	3	190	0	190	21	211	-13	198	-2	196	9
462	204	11	215	-6	209	1	210	2	212	0	212	8
463	191	4	195	-1	194	2	196	4	200	4	204	13
464	190	4	194	0	194	0	194	6	200	10	210	20
Mean	202	6	207	-1	207	2	209	2	212	4	215	14
SD	12	3	14	2	13	5	13	5	13	8	18	9

The means for body weights and body weight changes are calculated and rounded separately.
Differences between control and this treatment group were not significant ($p>0.05$).

Appendix V - Table 8

Adult Body Weight (g) from a Northern Bobwhite Reproduction Study with H-28548

(1000 PPM, Females)

Pen	Week 0	Change Week 0-2	Week 2	Change Week 2-4	Week 4	Change Week 4-6	Week 6	Change Week 6-8	Week 8	Change Week 8-Term	Test Term	Total Change
449	191	5	196	0	196	1	197	6	203	47	250	59
450	219	2	221	-3	218	1	219	-3	216	43	259	40
451	192	8	200	2	202	0	202	0	202	48	250	58
452	220	1	221	-1	220	3	223	4	227	58	285	65
453	225	2	227	1	228	0	228	-1	227	34	261	36
454	178	4	182	-3	179	2	181	5	186	22	208	30
455	201	2	203	4	207	-2	205	1	206	35	241	40
456	203	3	206	-3	203	0	203	-3	200	18	218	15
457	191	5	196	-3	193	4	197	-6	191	40	231	40
458	204	7	211	-6	205	2	207	1	208	27	235	31
459	178	5	183	-1	182	1	183	2	185	35	220	42
460	203	6	209	-2	207	3	210	7	217	35	252	49
461	198	3	201	-1	200	-1	199	-1	198	32	230	32
462	205	5	210	-4	206	1	207	3	210	31	241	36
463	186	2	188	-2	186	0	186	5	191	36	227	41
464	205	-3	202	-1	201	2	203	8	211	33	244	39
Mean	200	4	204	-1	202	1	203	2	205	36	241	41
SD	14	3	13	2	13	2	13	4	13	10	19	12

The means for body weights and body weight changes are calculated and rounded separately.
Differences between control and this treatment group were not significant ($p>0.05$).

Appendix VI - Table 1
Feed Consumption (g/bird/day) from a Northern Bobwhite Reproduction Study with H-28548 (Control)

	WEEKS																			
Pen	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
401	12	12	12	12	12	12	11	13	12	12	15	17	19	20	21	21	22	23	23	23
402	12	13	12	13	12	12	12	16	14	14	14	19	19	21	21	21	22	23	22	22
403	12	12	13	14	13	12	13	16	14	14	14	15	14	15	15	15	16	16	17	18
404	13	12	13	13	13	12	12	14	14	15	16	20	20	21	22	22	22	23	23	22
405	12	12	12	13	13	12	12	13	13	15	17	16	19	19	20	20	19	22	23	20
406	14	16	15	16	15	14	14	16	15	15	17	16	20	22	23	27	29	29	27	30
407	13	13	13	16	14	14	14	17	16	16	16	16	18	18	16	17	20	21	21	22
408	13	13	13	14	14	13	13	14	14	16	18	20	19	21	22	21	20	22	23	22
409	14	16	14	16	15	15	14	15	18	17	19	18	21	22	23	23	23	24	24	23
410	13	13	12	14	13	13	13	16	16	17	20	19	18	21	21	21	21	22	21	21
411	13	13	13	14	15	14	15	18	17	19	20	23	22	23	23	23	23	23	23	23
412	12	13	13	14	13	12	12	16	14	15	17	19	20	21	22	23	23	23	23	22
413	13	13	13	14	13	13	12	15	12	-	-	-	-	-	-	-	-	-	-	-
414	15	15	15	17	15	19	17	18	17	18	17	18	20	21	21	22	21	23	21	21
415	12	13	12	13	13	12	13	15	14	14	15	15	16	17	17	17	19	19	20	20
416	13	14	14	18	15	14	14	18	18	16	18	20	21	22	23	23	25	26	25	23
Mean	13	13	13	14	14	13	13	16	15	16	17	18	19	20	21	21	22	23	22	22
SD	1	1	1	2	1	2	1	2	2	2	2	2	2	2	3	3	3	3	2	3

- Data are not available due to adult mortality.

Appendix VI - Table 2

Feed Consumption (g/bird/day) from a Northern Bobwhite Reproduction Study with H-28548 (100 PPM)

	WEEKS																			
Pen	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
417	13	15	14	15	15	14	15	16	17	16	17	19	19	20	21	22	24	25	22	20
418	13	13	13	14	14	14	13	15	15	17	15	17	20	21	23	22	23	22	24	25
419	13	14	13	15	15	13	14	14	13	16	15	18	22	22	22	23	24	25	25	30
420	12	13	12	14	15	12	13	14	14	15	16	15	17	22	21	21	21	22	22	22
421	13	12	13	14	14	14	14	16	14	18	16	18	20	23	22	23	24	25	25	25
422	13	13	13	14	14	13	13	14	14	17	18	20	21	23	22	23	22	22	25	24
423	11	12	12	13	14	13	13	15	14	14	17	15	17	19	21	20	21	25	24	23
424	12	12	11	13	12	12	12	14	13	15	15	16	18	19	20	20	21	24	22	22
425	11	11	11	12	12	11	11	14	12	18	13	16	19	19	21	21	21	23	25	22
426	12	12	11	13	13	12	12	15	15	16	17	19	20	21	22	22	22	23	23	23
427	12	14	10	14	13	13	14	16	15	16	16	20	20	21	22	21	22	22	22	23
428	13	13	15	14	14	13	13	14	15	19	19	21	21	22	23	23	24	24	22	22
429	12	12	13	14	14	13	13	16	16	17	19	19	21	22	24	35	22	23	24	24
430	14	15	14	17	18	16	16	20	20	22	26	25	27	27	27	17	26	28	27	27
431	12	12	11	13	12	12	13	13	13	12	14	13	17	18	20	20	20	21	21	23
432	13	13	13	15	14	14	13	16	14	16	17	18	19	20	20	19	18	21	21	21
Mean	12	13	12	14	14	13	13	15	14	16	17	18	20	21	22	22	22	23	23	23
SD	1	1	1	1	1	1	1	2	2	2	3	3	2	2	2	4	2	2	2	2

Differences between control and this treatment group were not significant ($p > 0.05$).

Appendix VI - Table 3

Feed Consumption (g/bird/day) from a Northern Bobwhite Reproduction Study with H-28548 (500 PPM)

	WEEKS																			
Pen	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
433	13	14	12	14	14	13	13	15	15	17	17	17	19	21	21	20	21	21	22	21
434	13	13	13	13	12	11	11	13	12	13	15	16	18	19	20	21	21	21	21	20
435	12	12	13	13	13	12	13	15	15	15	17	18	18	18	20	20	20	21	21	20
436	13	14	14	15	15	14	14	16	16	16	16	19	20	20	22	23	25	26	26	27
437	13	13	13	13	14	13	14	16	15	14	16	16	18	18	17	18	20	20	19	19
438	13	13	13	14	13	12	13	15	17	16	19	19	24	22	23	23	23	23	23	23
439	11	11	14	14	13	12	13	14	17	17	20	20	22	22	23	23	23	23	23	12
440	13	13	13	13	13	12	13	14	13	15	17	18	19	19	20	21	21	22	22	17
441	12	13	13	14	13	13	13	#	13	13	16	17	17	18	19	19	22	21	21	22
442	13	13	13	16	14	14	13	16	13	14	15	15	17	20	21	22	23	24	24	23
443	14	15	15	18	19	16	16	19	18	18	19	21	25	25	27	25	30	31	27	33
444	14	15	16	17	15	14	15	17	15	17	18	17	19	20	21	19	22	23	24	24
445	14	14	13	15	15	15	14	17	19	18	19	22	23	25	25	25	27	25	22	15
446	13	15	21	18	19	18	8	21	16	18	23	24	21	12	26	26	27	27	27	30
447	13	12	12	13	13	12	12	13	13	12	15	15	18	19	20	20	22	22	23	22
448	13	13	13	14	14	13	13	14	14	16	16	17	20	20	21	21	22	23	23	23
Mean	13	13	14	15	14	13	13	16	15	16	17	18	20	20	22	22	23	23	23	22
SD	1	1	2	2	2	2	2	2	2	2	2	2	2	3	3	2	3	3	2	5

data not available due to wet feed

Differences between control and this treatment group were not significant ($p>0.05$).

Appendix VI - Table 4
Feed Consumption (g/bird/day) from a Northern Bobwhite Reproduction Study with H-28548 (1000 PPM)

	WEEKS																			
Pen	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
449	12	13	13	13	13	13	12	16	15	16	19	18	19	22	21	23	23	22	24	23
450	14	14	13	14	13	13	13	14	14	14	16	16	18	19	20	22	22	22	22	21
451	13	13	13	16	14	15	14	18	15	16	20	21	23	28	27	27	28	26	26	25
452	14	15	14	15	15	14	14	18	16	16	19	20	19	22	23	23	26	25	26	26
453	15	16	15	18	16	15	14	17	15	17	18	18	19	19	20	20	22	21	23	23
454	11	12	12	13	12	12	11	13	13	13	13	15	16	17	17	18	18	19	19	22
455	13	13	13	14	14	13	13	15	15	18	17	18	20	21	24	25	25	26	26	24
456	13	14	13	15	14	13	13	15	14	16	16	19	19	18	20	22	22	21	22	22
457	13	13	13	14	14	12	12	13	14	16	18	15	19	18	22	23	24	25	25	25
458	12	14	13	14	14	13	12	15	15	17	17	18	20	21	22	22	23	24	23	24
459	13	14	14	16	16	16	15	18	17	15	17	19	16	17	19	20	22	20	21	23
460	13	16	15	16	15	15	14	17	19	19	19	23	23	26	26	26	26	25	25	25
461	15	15	15	15	14	15	15	18	15	16	17	18	20	19	20	20	21	23	22	22
462	13	14	14	15	15	14	15	18	15	15	16	20	18	19	20	21	22	23	23	23
463	12	13	12	14	13	13	12	15	14	15	15	15	16	17	18	18	19	20	19	19
464	14	15	15	15	15	14	14	18	16	17	19	20	21	23	23	23	24	23	24	23
Mean	13	14	14	15	14	14	13	16	15	16	17	18	19	20	21	22	23	23	23	23
SD	1	1	1	1	1	1	1	2	1	1	2	2	2	3	3	3	3	2	2	2

Differences between control and this treatment group were not significant ($p > 0.05$).

Reproductive Performance by Pen

Appendix VII - Table 1

Eggs Laid / Maximum Laid (%)

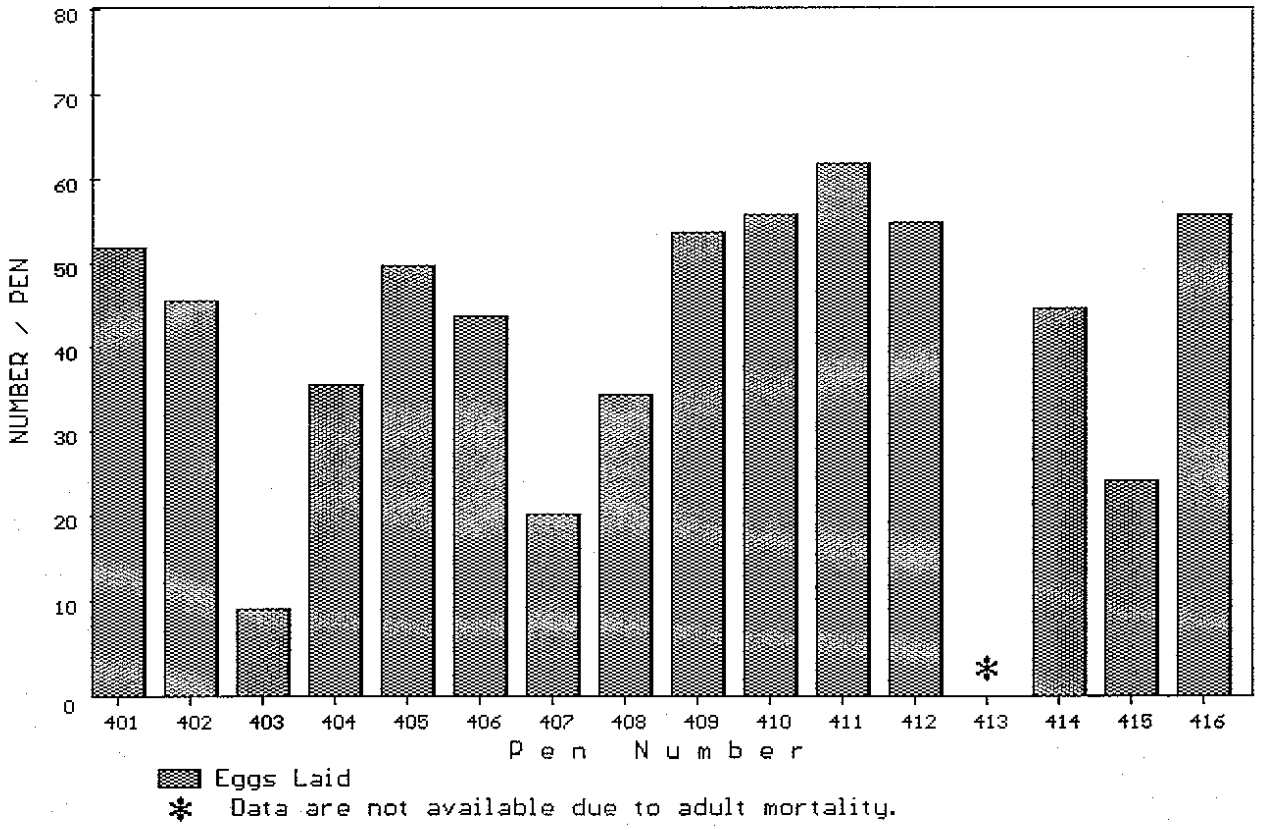
from a Northern Bobwhite Reproduction Study with H-28548

	0 PPM				100 PPM				500 PPM				1000 PPM			
Replicate	Eggs Laid	Max. Laid	%	Arcsin Trans.	Eggs Laid	Max. Laid	%	Arcsin Trans.	Eggs Laid	Max. Laid	%	Arcsin Trans.	Eggs Laid	Max. Laid	%	Arcsin Trans.
1	52	70	74	59.53	56	70	80	63.43	43	70	61	51.61	55	70	79	62.42
2	46	70	66	54.16	49	70	70	56.79	52	70	74	59.53	26	70	37	37.55
3	10	70	14	22.21	52	70	74	59.53	46	70	66	54.16	58	70	83	65.54
4	36	70	51	45.82	54	70	77	61.44	34	70	49	44.18	38	70	54	47.46
5	50	70	71	57.69	45	70	64	53.30	14	70	20	26.57	37	70	53	46.64
6	44	70	63	52.45	45	70	64	53.30	67	70	96	78.05	43	70	61	51.61
7	21	70	30	33.21	36	70	51	45.82	70	70	100	90.00	49	70	70	56.79
8	35	70	50	45.00	59	70	84	66.65	30	70	43	40.89	28	70	40	39.23
9	54	70	77	61.44	44	70	63	52.45	46	70	66	54.16	24	70	34	35.84
10	56	70	80	63.43	52	70	74	59.53	43	70	61	51.61	56	70	80	63.43
11	62	70	89	70.24	46	70	66	54.16	50	70	71	57.69	35	70	50	45.00
12	55	70	79	62.42	38	70	54	47.46	14	70	20	26.57	65	70	93	74.50
13	-	-	-	-	53	70	76	60.47	57	70	81	64.47	25	70	36	36.70
14	45	70	64	53.30	68	70	97	80.27	36	70	51	45.82	27	70	39	38.39
15	25	70	36	36.70	44	70	63	52.45	46	70	66	54.16	33	70	47	43.36
16	56	70	80	63.43	39	70	56	48.28	40	70	57	49.11	59	70	84	66.65
Total	647	1050			780	1120			688	1120			658	1120		
Mean	43	70	62	52.07	49	70	70	57.21	43	70	61	53.04	41	70	59	50.70
SD	15	0	21	13.23	8	0	12	8.52	16	0	22	16.10	14	0	20	12.56

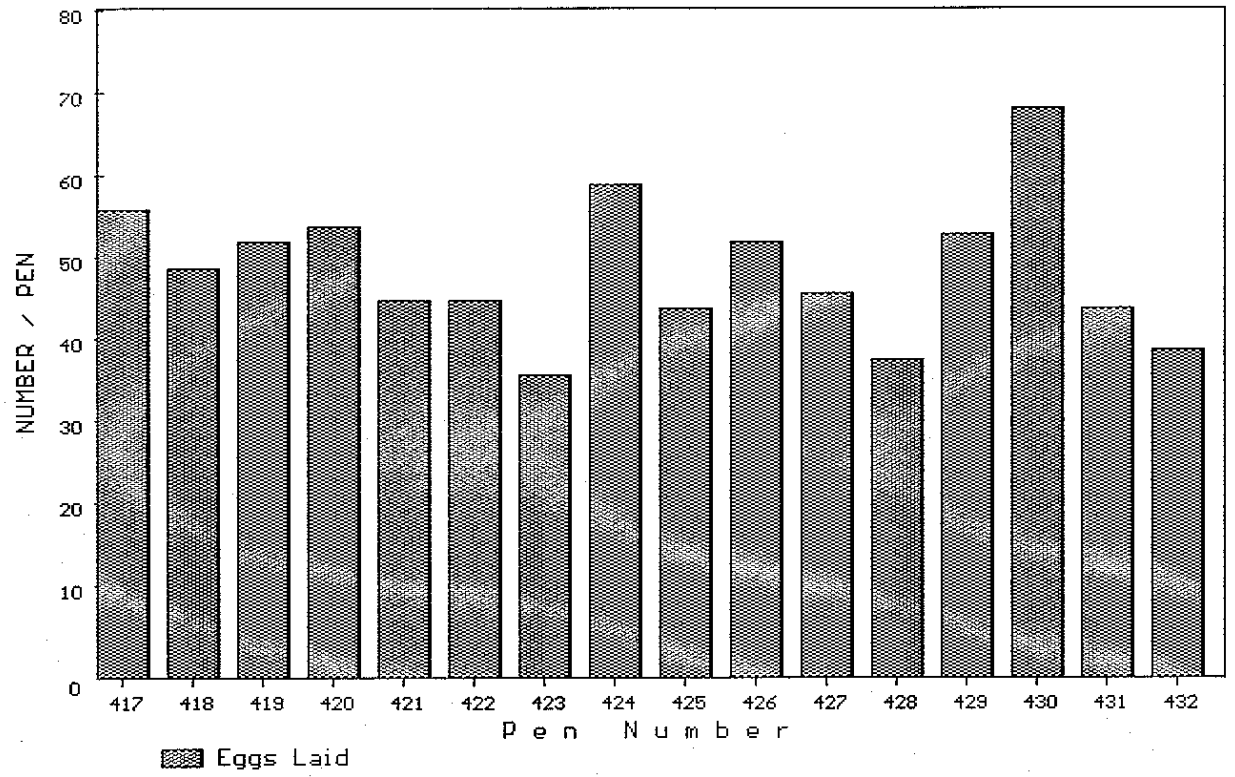
- Data are not available due to adult mortality.

Differences between the control and each treatment group were not significant ($p > 0.05$).

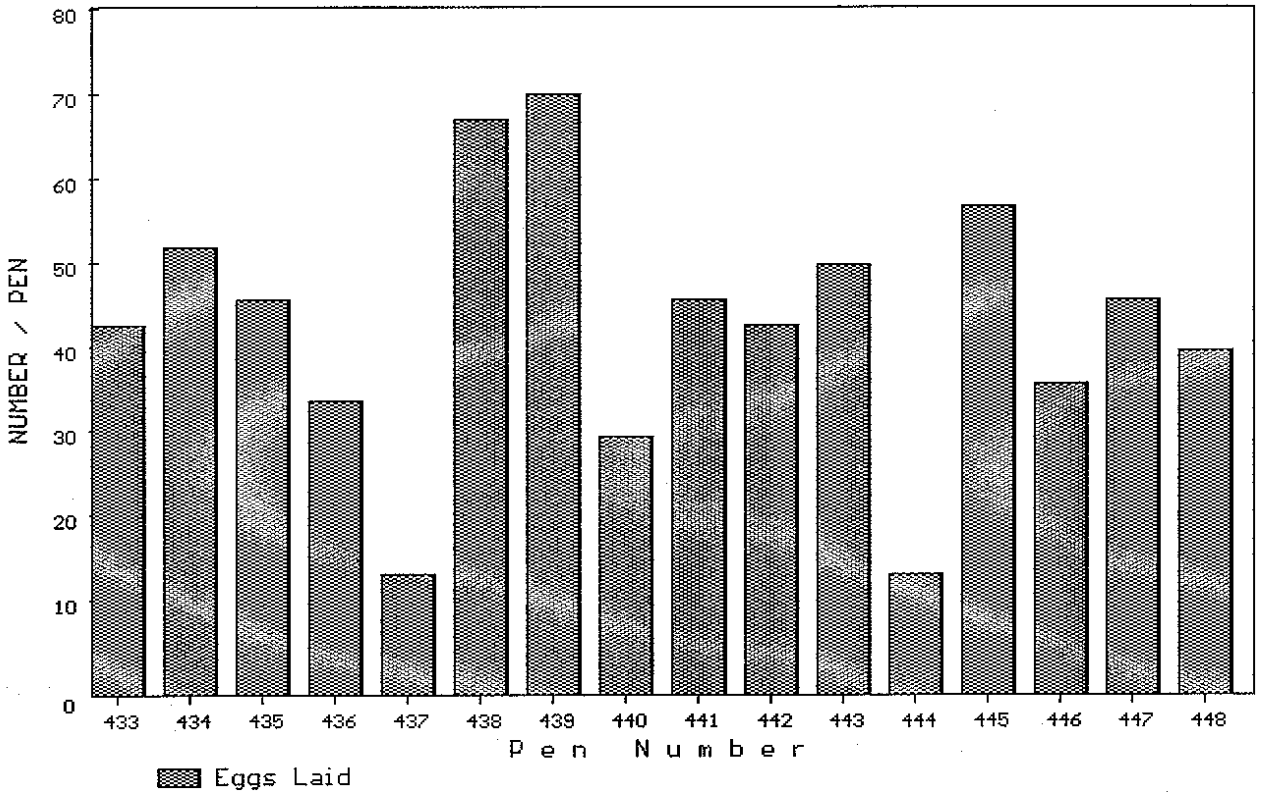
Appendix VII - Figure 1a
Eggs Laid from a Northern Bobwhite
Reproduction Study with H-28548 - Control



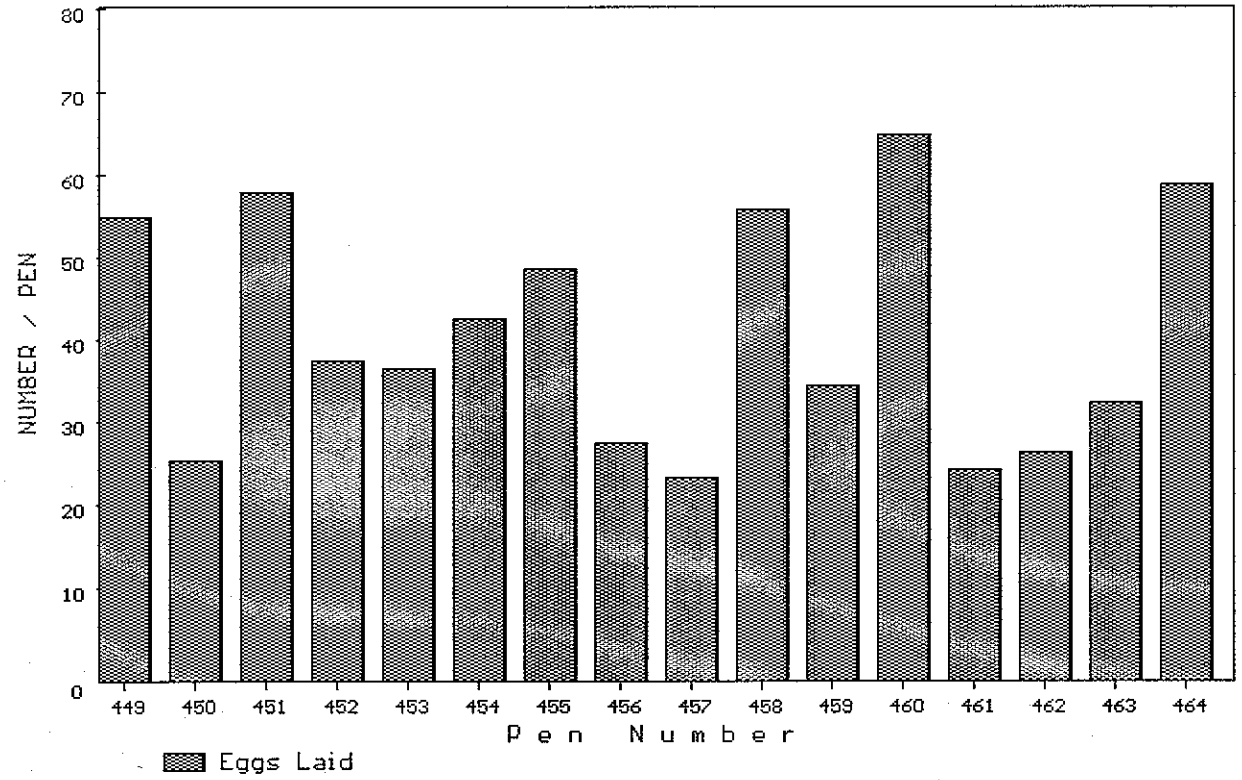
Appendix VII - Figure 1b
Eggs Laid from a Northern Bobwhite
Reproduction Study with H-28548 - 100 PPM



Appendix VII - Figure 1c
Eggs Laid from a Northern Bobwhite
Reproduction Study with H-28548 - 500 PPM



Appendix VII - Figure 1d
Eggs Laid from a Northern Bobwhite
Reproduction Study with H-28548 - 1000 PPM



Reproductive Performance by Pen

Appendix VII - Table 2

Eggs Cracked / Eggs Laid (%)

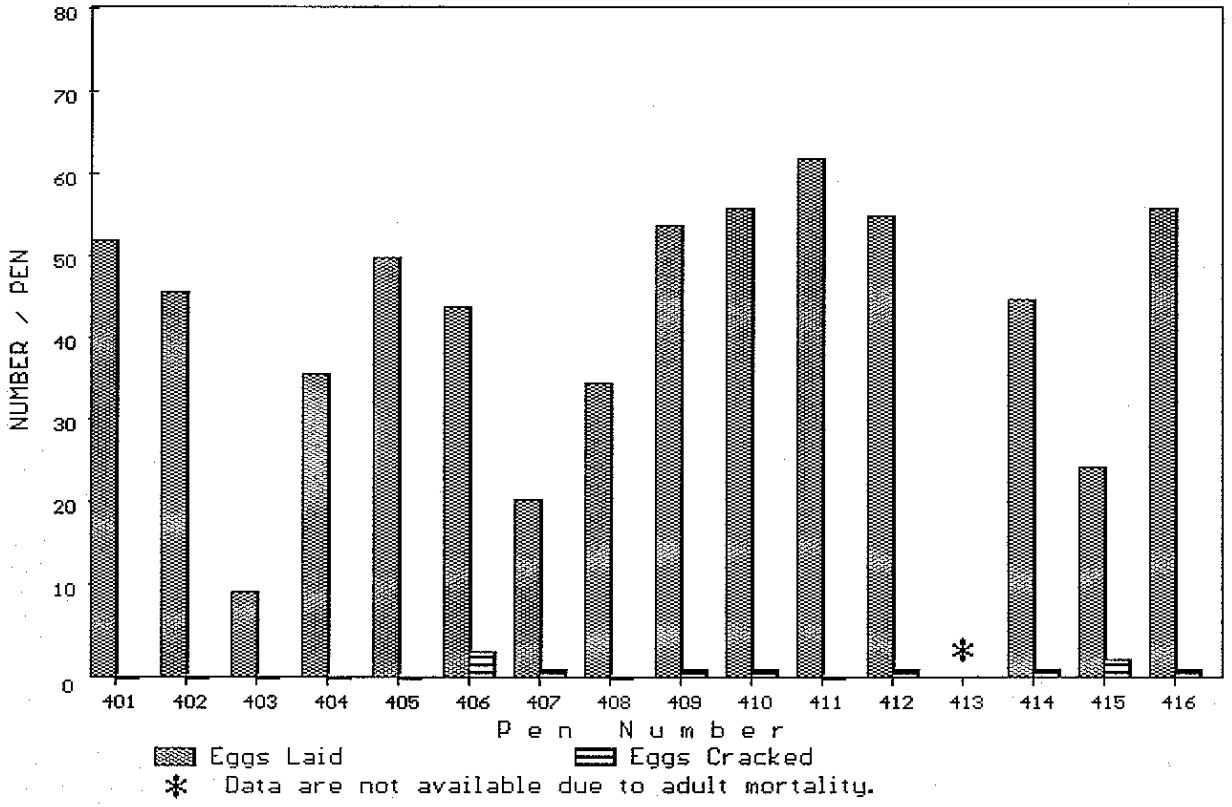
from a Northern Bobwhite Reproduction Study with H-28548

	0 PPM				100 PPM				500 PPM				1000 PPM			
Replicate	Eggs Crack	Eggs Laid	%	Arcsin Trans.	Eggs Crack	Eggs Laid	%	Arcsin Trans.	Eggs Crack	Eggs Laid	%	Arcsin Trans.	Eggs Crack	Eggs Laid	%	Arcsin Trans.
1	0	52	0	0.00	0	56	0	0.00	0	43	0	0.00	2	55	4	10.99
2	0	46	0	0.00	2	49	4	11.66	2	52	4	11.31	0	26	0	0.00
3	0	10	0	0.00	0	52	0	0.00	0	46	0	0.00	0	58	0	0.00
4	0	36	0	0.00	0	54	0	0.00	0	34	0	0.00	0	38	0	0.00
5	0	50	0	0.00	0	45	0	0.00	2	14	14	22.21	2	37	5	13.44
6	3	44	7	15.14	0	45	0	0.00	0	67	0	0.00	2	43	5	12.45
7	1	21	5	12.60	0	36	0	0.00	1	70	1	6.86	0	49	0	0.00
8	0	35	0	0.00	0	59	0	0.00	0	30	0	0.00	0	28	0	0.00
9	1	54	2	7.82	0	44	0	0.00	0	46	0	0.00	0	24	0	0.00
10	1	56	2	7.68	1	52	2	7.97	0	43	0	0.00	1	56	2	7.68
11	0	62	0	0.00	0	46	0	0.00	0	50	0	0.00	0	35	0	0.00
12	1	55	2	7.75	0	38	0	0.00	0	14	0	0.00	1	65	2	7.13
13	-	-	-	-	0	53	0	0.00	0	57	0	0.00	0	25	0	0.00
14	1	45	2	8.57	0	68	0	0.00	1	36	3	9.59	0	27	0	0.00
15	2	25	8	16.43	0	44	0	0.00	0	46	0	0.00	0	33	0	0.00
16	1	56	2	7.68	0	39	0	0.00	0	40	0	0.00	0	59	0	0.00
Total	11	647			3	780			6	688			8	658		
Mean	1	43	2	5.58	0	49	0	1.23	0	43	1	3.12	1	41	1	3.23
SD	1	15	3	6.00	1	8	1	3.42	1	16	4	6.35	1	14	2	5.16

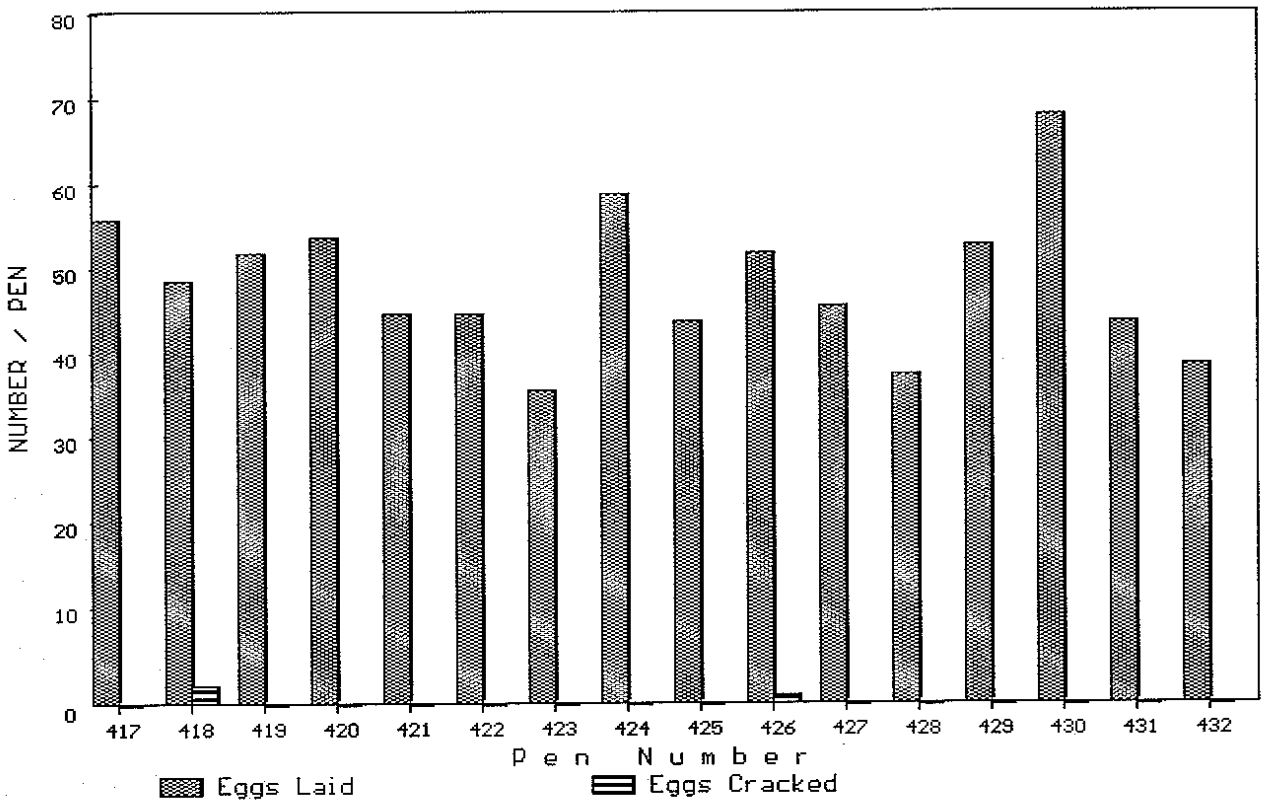
- Data are not available due to adult mortality.

Differences between the control and each treatment group were not significant ($p > 0.05$).

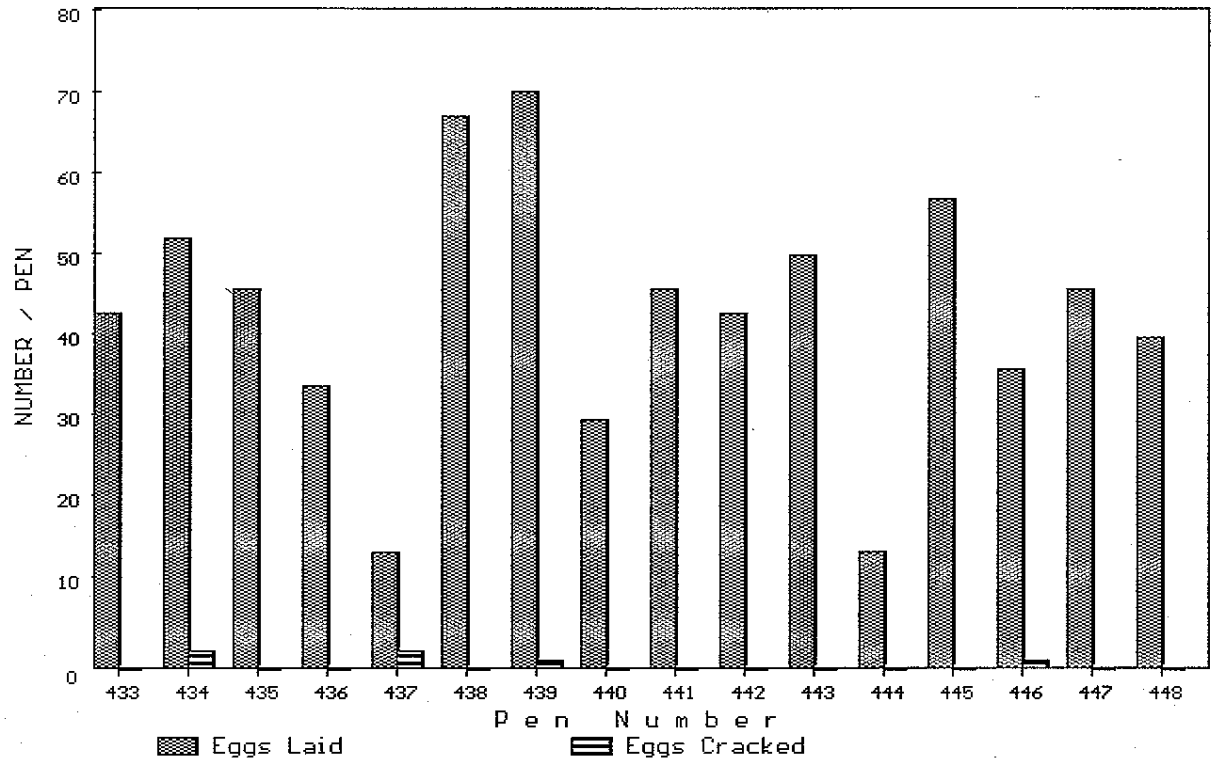
Appendix VII - Figure 2a
Eggs Cracked / Eggs Laid from a Northern Bobwhite
Reproduction Study with H-28548 - Control



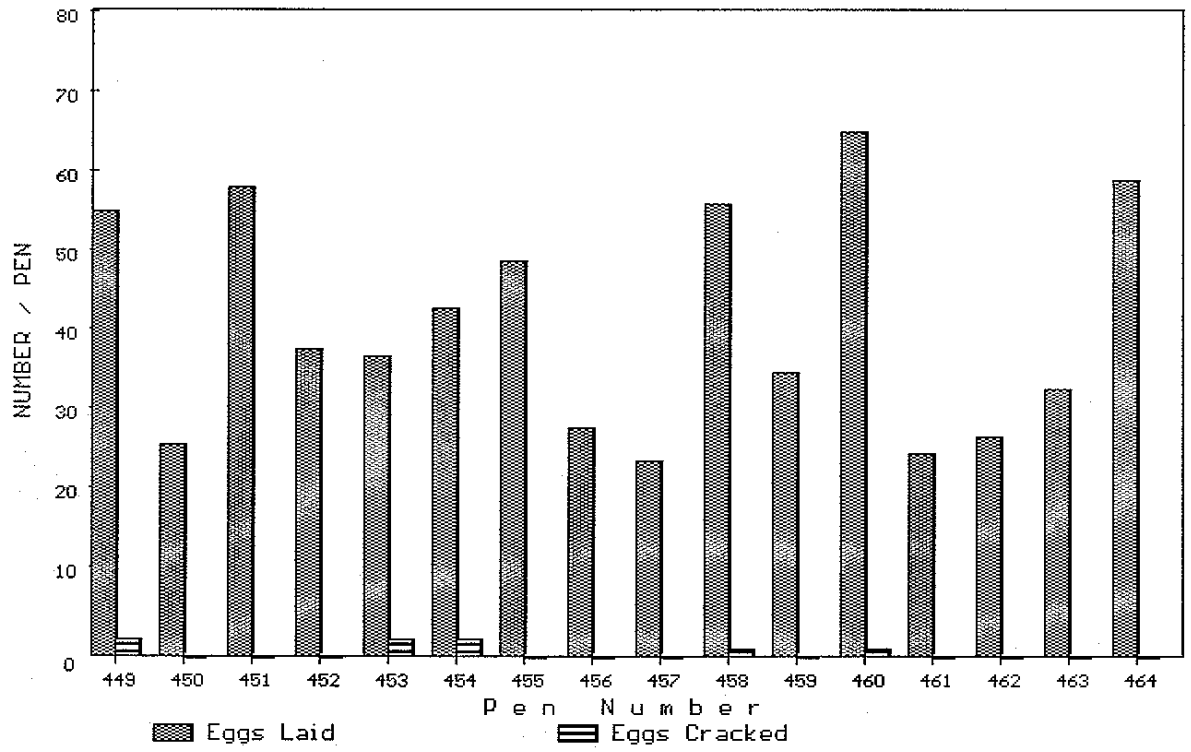
Appendix VII - Figure 2b
Eggs Cracked / Eggs Laid from a Northern Bobwhite
Reproduction Study with H-28548 - 100 PPM



Appendix VII - Figure 2c
Eggs Cracked / Eggs Laid from a Northern Bobwhite
Reproduction Study with H-28548 - 500 PPM



Appendix VII - Figure 2d
Eggs Cracked / Eggs Laid from a Northern Bobwhite
Reproduction Study with H-28548 - 1000 PPM



Reproductive Performance by Pen

Appendix VII - Table 3

Viable Embryos / Eggs Set (%)

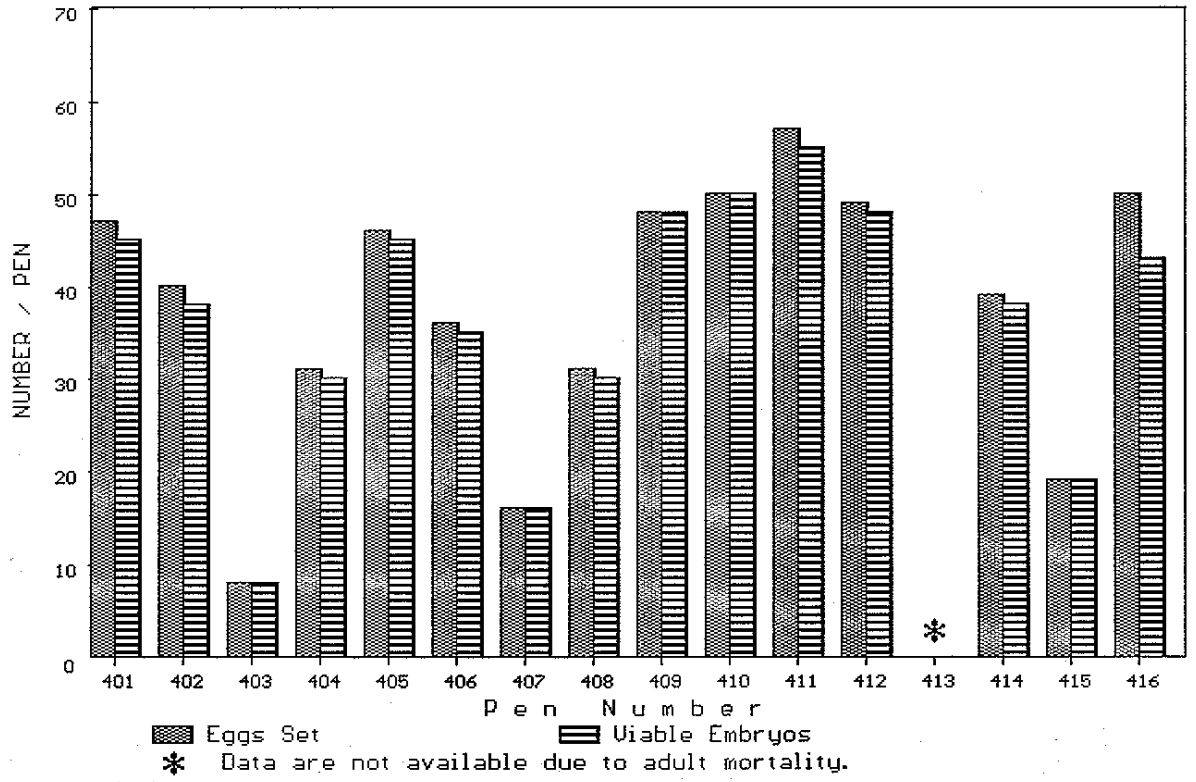
from a Northern Bobwhite Reproduction Study with H-28548

	0 PPM				100 PPM				500 PPM				1000 PPM			
Replicate	Viable Embr.	Eggs Set	%	Arcsin Trans.	Viable Embr.	Eggs Set	%	Arcsin Trans.	Viable Embr.	Eggs Set	%	Arcsin Trans.	Viable Embr.	Eggs Set	%	Arcsin Trans.
1	45	47	96	78.10	50	50	100	90.00	39	39	100	90.00	44	47	94	75.37
2	38	40	95	77.08	40	40	100	90.00	45	45	100	90.00	21	22	95	77.69
3	8	8	100	90.00	31	48	65	53.48	41	41	100	90.00	53	53	100	90.00
4	30	31	97	79.65	46	49	94	75.67	30	30	100	90.00	34	34	100	90.00
5	45	46	98	81.52	37	41	90	71.80	9	9	100	90.00	31	31	100	90.00
6	35	36	97	80.41	33	40	82	65.27	55	62	89	70.37	31	35	89	70.24
7	16	16	100	90.00	23	32	72	57.97	33	62	53	46.85	45	45	100	90.00
8	30	31	97	79.65	44	53	83	65.66	24	25	96	78.46	24	24	100	90.00
9	48	48	100	90.00	40	40	100	90.00	42	42	100	90.00	13	21	62	51.89
10	50	50	100	90.00	42	46	91	72.85	39	39	100	90.00	39	50	78	62.03
11	55	57	96	79.20	37	42	88	69.82	45	46	98	81.52	31	31	100	90.00
12	48	49	98	81.79	32	33	97	79.98	12	12	100	90.00	54	59	92	73.08
13	-	-	-	-	47	47	100	90.00	46	51	90	71.75	22	22	100	90.00
14	38	39	97	80.79	62	63	98	82.76	31	31	100	90.00	23	23	100	90.00
15	19	19	100	90.00	38	40	95	77.08	35	42	83	65.91	28	29	97	79.30
16	43	50	86	68.03	32	35	91	72.98	34	35	97	80.27	52	53	98	82.10
Total	548	567			634	699			560	611			545	579		
Mean	37	38	97	82.41	40	44	90	75.33	35	38	94	81.57	34	36	94	80.73
SD	14	14	4	6.41	9	8	10	11.46	12	15	12	12.45	13	13	10	11.78

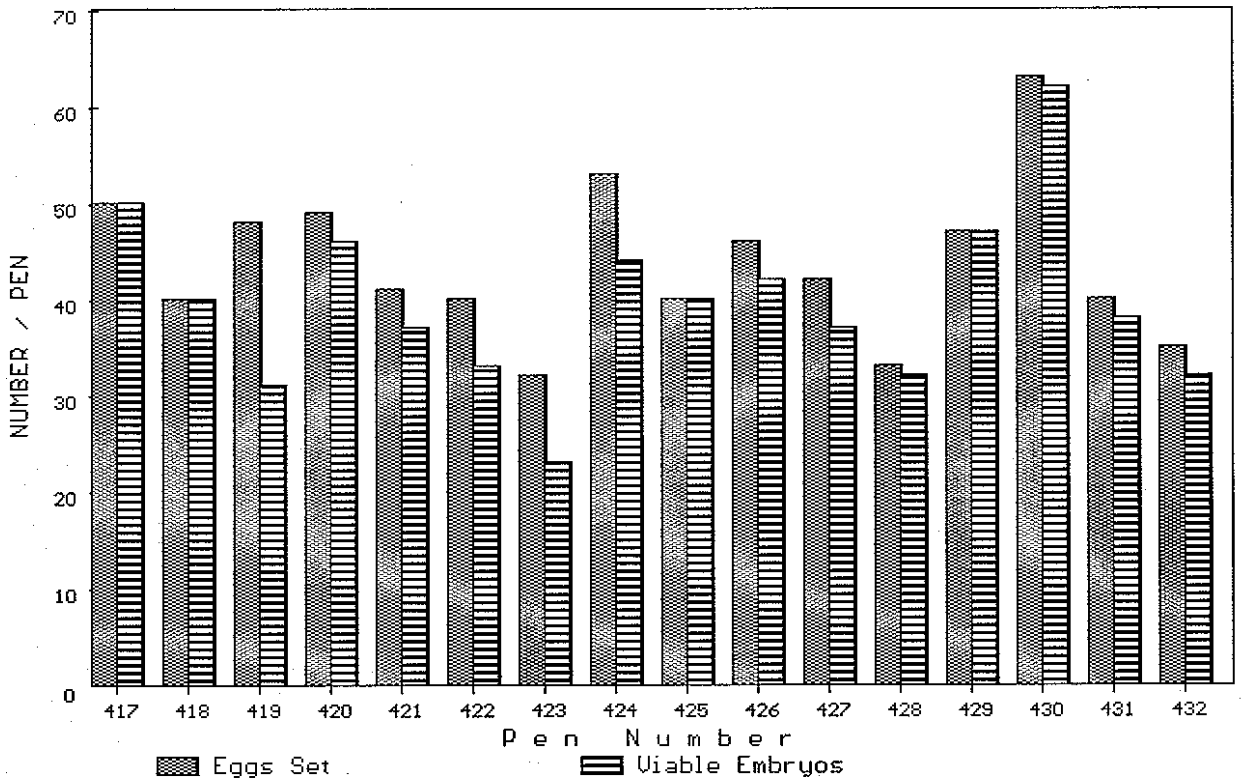
- Data are not available due to adult mortality.

Differences between the control and each treatment group were not significant ($p > 0.05$).

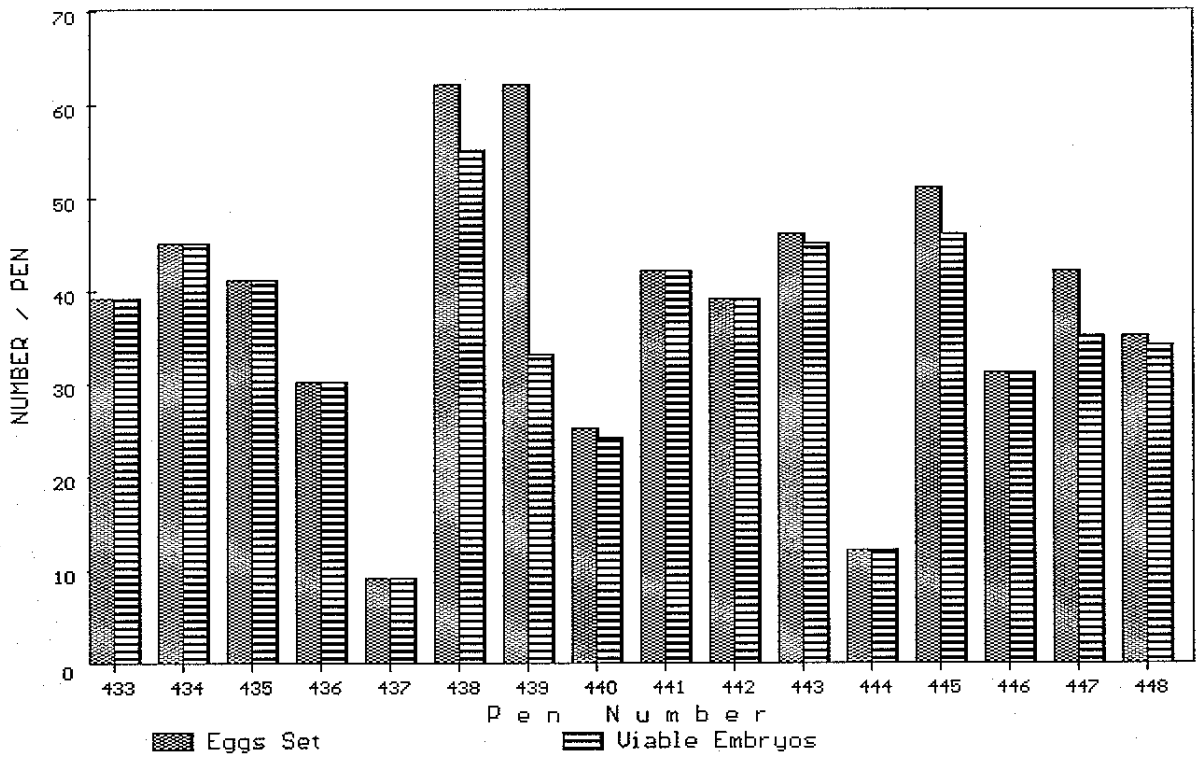
Appendix VII - Figure 3a
Viable Embryos / Eggs Set from a Northern Bobwhite
Reproduction Study with H-28548 - Control



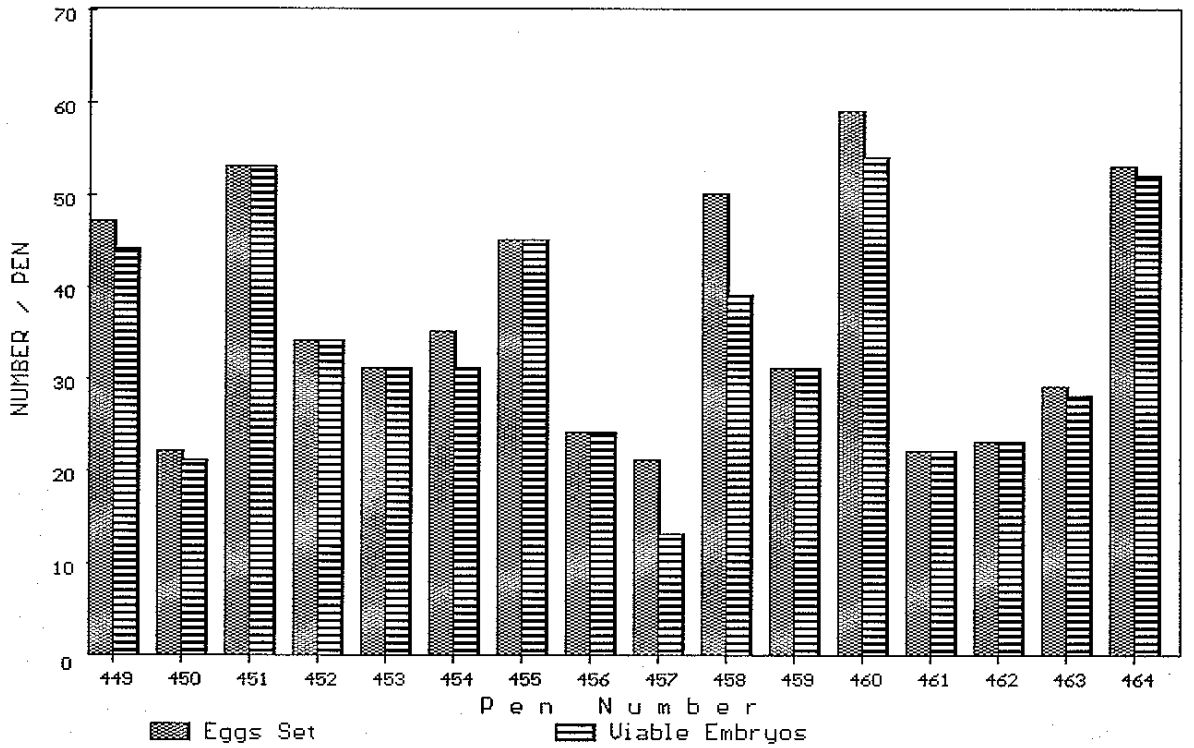
Appendix VII - Figure 3b
Viable Embryos / Eggs Set from a Northern Bobwhite
Reproduction Study with H-28548 - 100 PPM



Appendix VII - Figure 3c
Viable Embryos / Eggs Set from a Northern Bobwhite
Reproduction Study with H-28548 - 500 PPM



Appendix VII - Figure 3d
Viable Embryos / Eggs Set from a Northern Bobwhite
Reproduction Study with H-28548 - 1000 PPM



Reproductive Performance by Pen

Appendix VII - Table 4

Live 3-Week Embryos / Viable Embryos (%)

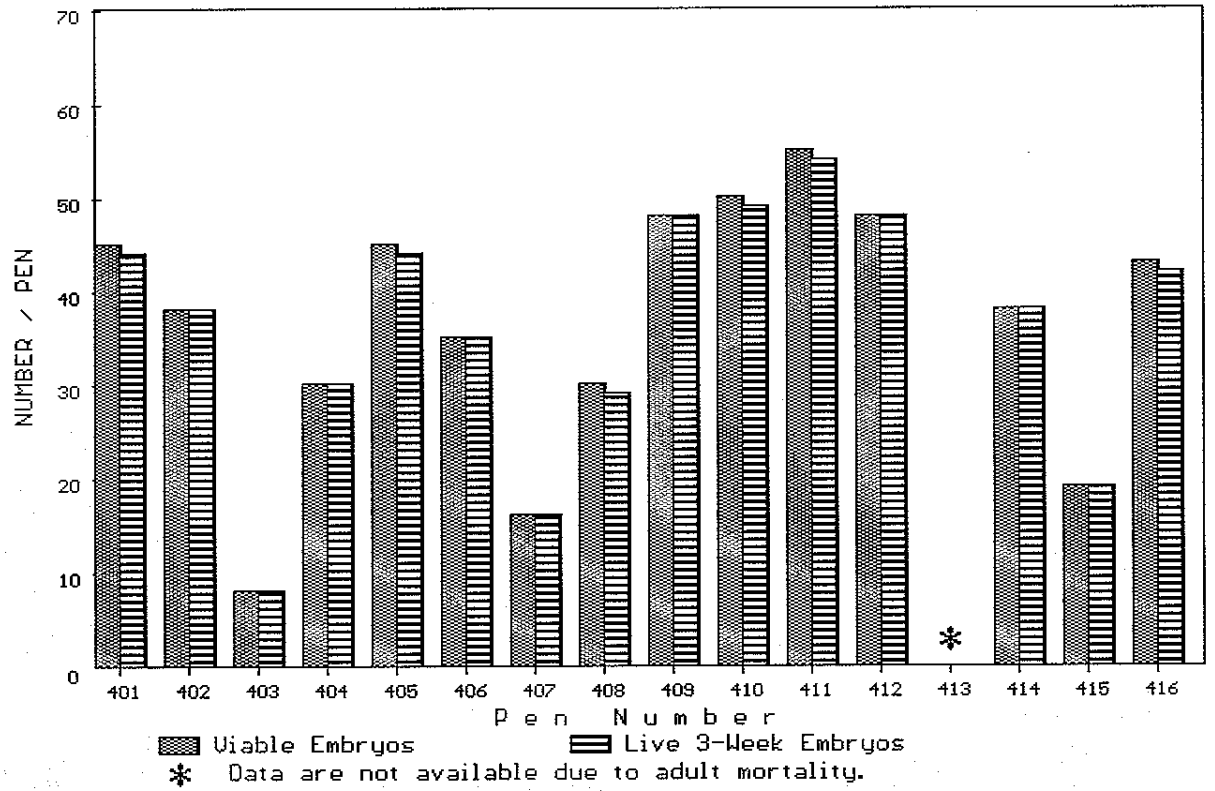
from a Northern Bobwhite Reproduction Study with H-28548

	0 PPM				100 PPM				500 PPM				1000 PPM			
Replicate	Live 3-Week	Viable Embr.	%	Arcsin Trans.	Live 3-Week	Viable Embr.	%	Arcsin Trans.	Live 3-Week	Viable Embr.	%	Arcsin Trans.	Live 3-Week	Viable Embr.	%	Arcsin Trans.
1	44	45	98	81.43	50	50	100	90.00	39	39	100	90.00	44	44	100	90.00
2	38	38	100	90.00	40	40	100	90.00	45	45	100	90.00	21	21	100	90.00
3	8	8	100	90.00	31	31	100	90.00	41	41	100	90.00	53	53	100	90.00
4	30	30	100	90.00	46	46	100	90.00	30	30	100	90.00	34	34	100	90.00
5	44	45	98	81.43	37	37	100	90.00	9	9	100	90.00	31	31	100	90.00
6	35	35	100	90.00	33	33	100	90.00	55	55	100	90.00	31	31	100	90.00
7	16	16	100	90.00	23	23	100	90.00	33	33	100	90.00	45	45	100	90.00
8	29	30	97	79.48	43	44	98	81.33	24	24	100	90.00	24	24	100	90.00
9	48	48	100	90.00	40	40	100	90.00	42	42	100	90.00	13	13	100	90.00
10	49	50	98	81.87	41	42	98	81.12	39	39	100	90.00	32	39	82	64.93
11	54	55	98	82.25	37	37	100	90.00	45	45	100	90.00	31	31	100	90.00
12	48	48	100	90.00	32	32	100	90.00	12	12	100	90.00	54	54	100	90.00
13	-	-	-	-	47	47	100	90.00	46	46	100	90.00	22	22	100	90.00
14	38	38	100	90.00	62	62	100	90.00	31	31	100	90.00	23	23	100	90.00
15	19	19	100	90.00	38	38	100	90.00	34	35	97	80.27	28	28	100	90.00
16	42	43	98	81.23	32	32	100	90.00	34	34	100	90.00	52	52	100	90.00
Total	542	548			632	634			559	560			538	545		
Mean	36	37	99	86.51	40	40	100	88.90	35	35	100	89.39	34	34	99	88.43
SD	13	14	1	4.46	9	9	1	3.00	12	12	1	2.43	13	13	5	6.27

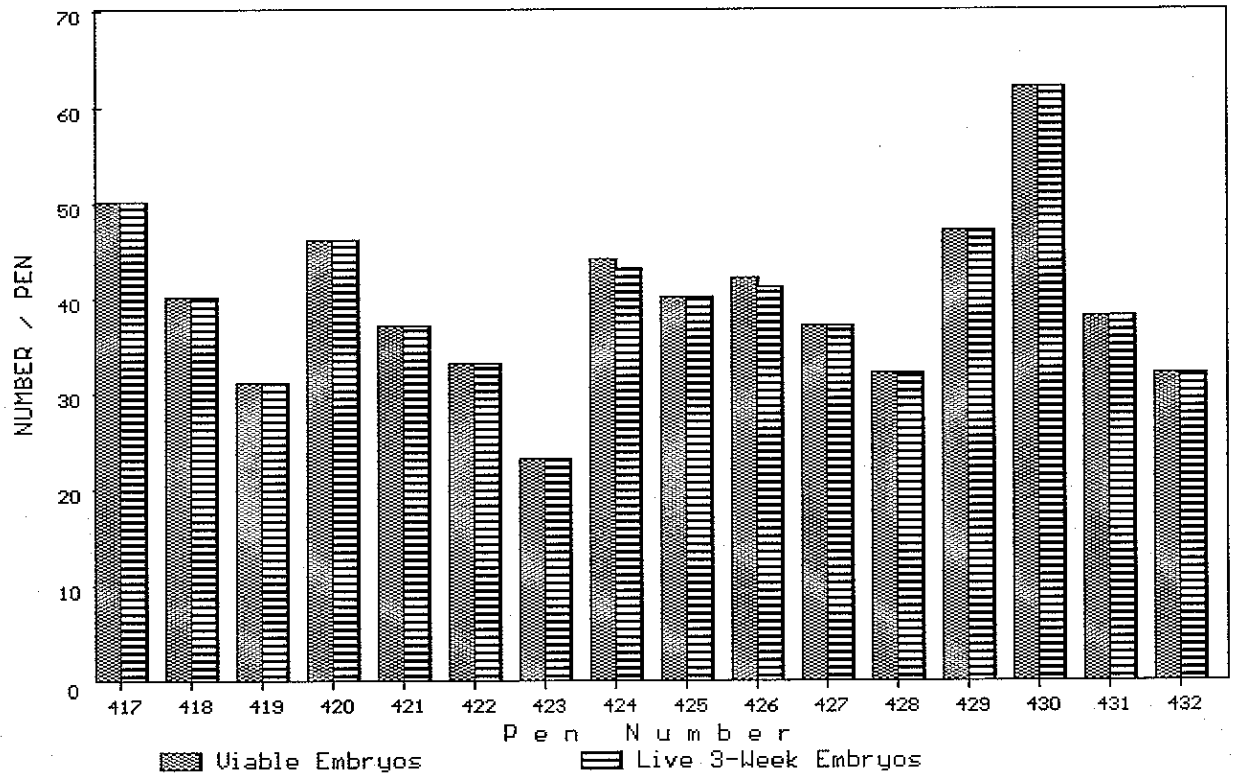
- Data are not available due to adult mortality.

Differences between the control and each treatment group were not significant ($p > 0.05$).

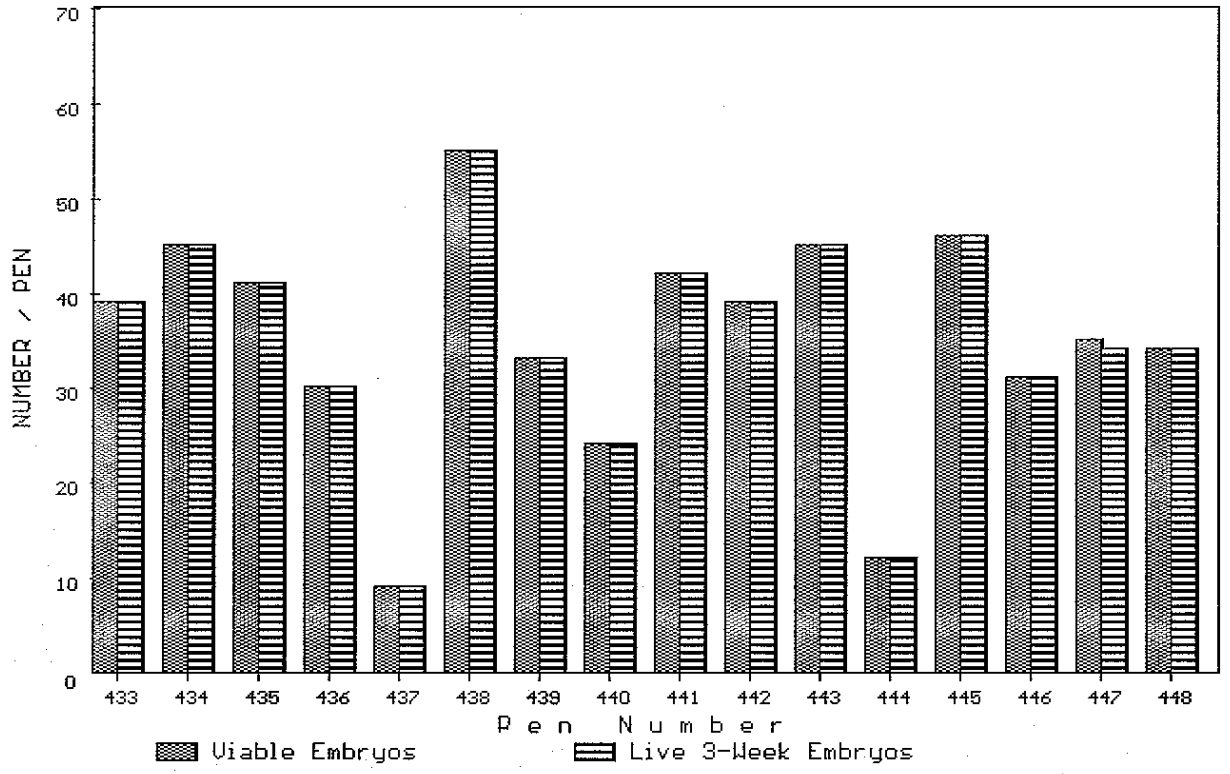
Appendix VII - Figure 4a
Live 3-Week Embryos / Viable Embryos from a Northern Bobwhite
Reproduction Study with H-28548 - Control



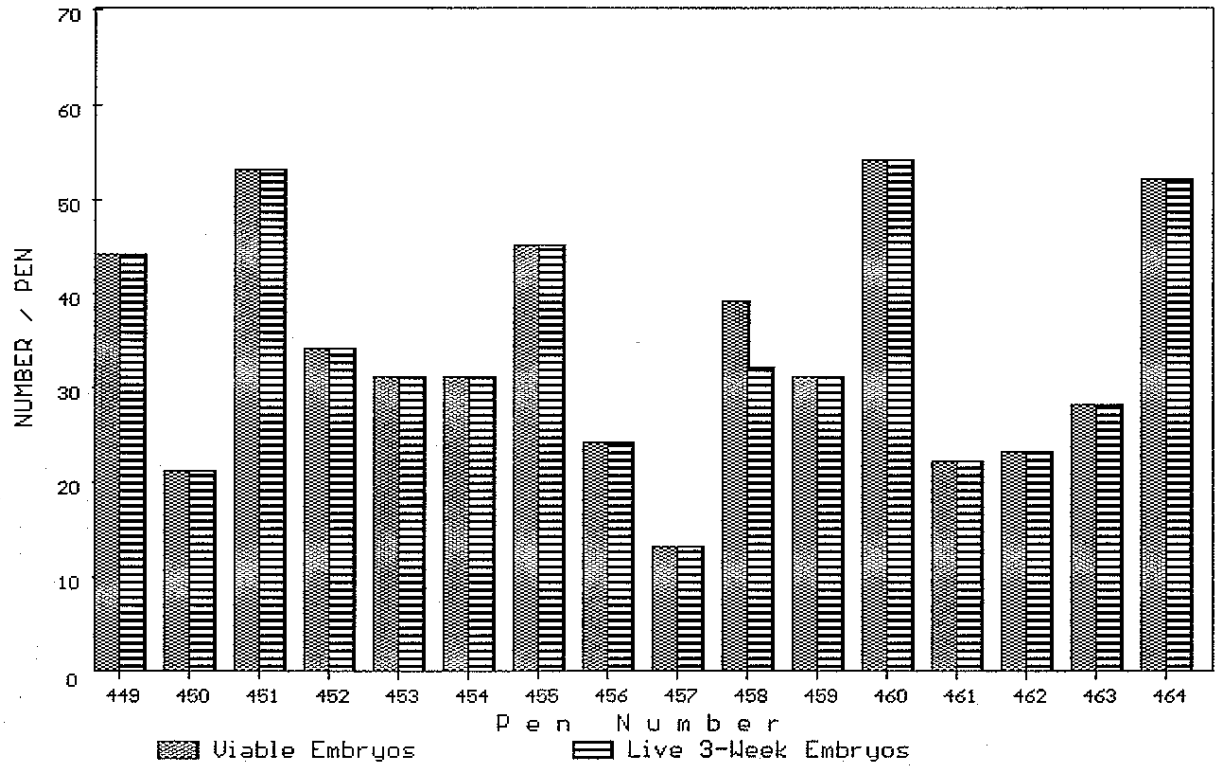
Appendix VII - Figure 4b
Live 3-Week Embryos / Viable Embryos from a Northern Bobwhite
Reproduction Study with H-28548 - 100 PPM



Appendix VII - Figure 4c
Live 3-Week Embryos / Viable Embryos from a Northern Bobwhite
Reproduction Study with H-28548 - 500 PPM



Appendix VII - Figure 4d
Live 3-Week Embryos / Viable Embryos from a Northern Bobwhite
Reproduction Study with H-28548 - 1000 PPM



Reproductive Performance by Pen

Appendix VII - Table 5

Hatchlings / Live 3-Week Embryos (%)

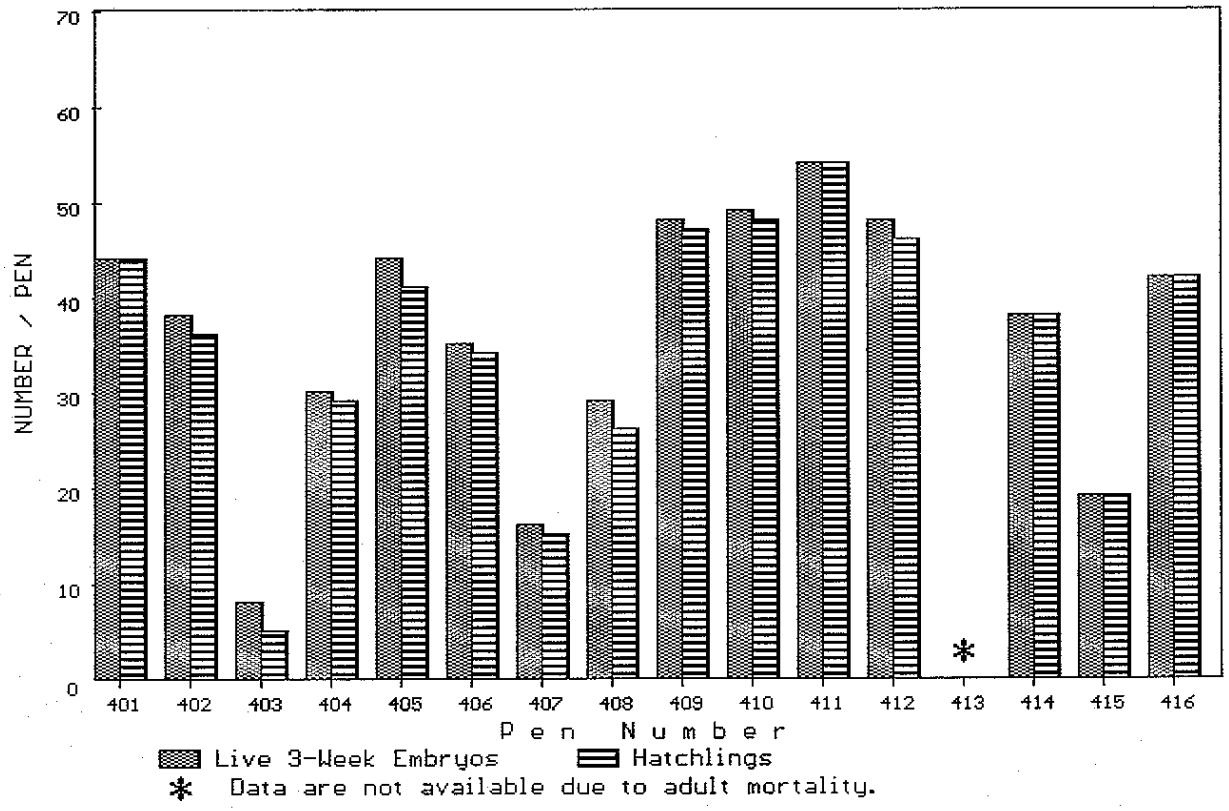
from a Northern Bobwhite Reproduction Study with H-28548

	0 PPM				100 PPM				500 PPM				1000 PPM			
Replicate	Number Hatch.	Live 3-Week	%	Arcsin Trans.	Number Hatch.	Live 3-Week	%	Arcsin Trans.	Number Hatch.	Live 3-Week	%	Arcsin Trans.	Number Hatch.	Live 3-Week	%	Arcsin Trans.
1	44	44	100	90.00	50	50	100	90.00	39	39	100	90.00	37	44	84	66.49
2	36	38	95	76.74	22	40	55	47.87	39	45	87	68.58	17	21	81	64.12
3	5	8	63	52.24	26	31	84	66.32	37	41	90	71.80	49	53	92	74.05
4	29	30	97	79.48	42	46	91	72.85	29	30	97	79.48	29	34	85	67.45
5	41	44	93	74.86	33	37	89	70.80	7	9	78	61.87	31	31	100	90.00
6	34	35	97	80.27	32	33	97	79.98	55	55	100	90.00	29	31	94	75.29
7	15	16	94	75.52	23	23	100	90.00	31	33	94	75.75	44	45	98	81.43
8	26	29	90	71.24	29	43	67	55.21	22	24	92	73.22	20	24	83	65.91
9	47	48	98	81.70	34	40	85	67.21	42	42	100	90.00	13	13	100	90.00
10	48	49	98	81.79	26	41	63	52.78	39	39	100	90.00	21	32	66	54.10
11	54	54	100	90.00	35	37	95	76.56	37	45	82	65.06	28	31	90	71.88
12	46	48	96	78.22	31	32	97	79.82	11	12	92	73.22	52	54	96	78.90
13	-	-	-	-	47	47	100	90.00	34	46	74	59.29	21	22	95	77.69
14	38	38	100	90.00	61	62	98	82.70	31	31	100	90.00	21	23	91	72.85
15	19	19	100	90.00	25	38	66	54.20	25	34	74	59.04	26	28	93	74.50
16	42	42	100	90.00	28	32	88	69.30	32	34	94	75.96	42	52	81	63.99
Total	524	542			544	632			510	559			480	538		
Mean	35	36	95	80.14	34	40	86	71.60	32	35	91	75.83	30	34	89	73.04
SD	14	13	9	10.05	11	9	15	13.77	12	12	9	11.45	12	13	9	9.51

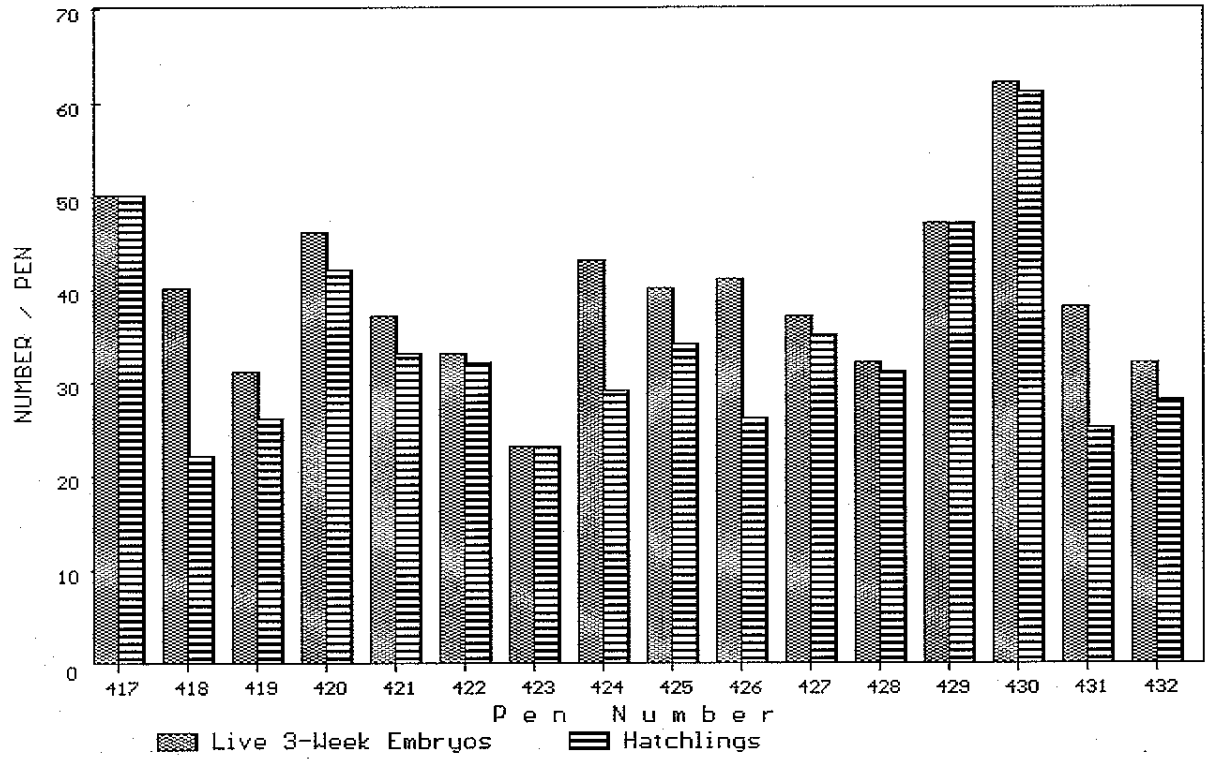
- Data are not available due to adult mortality.

Differences between the control and each treatment group were not significant ($p > 0.05$).

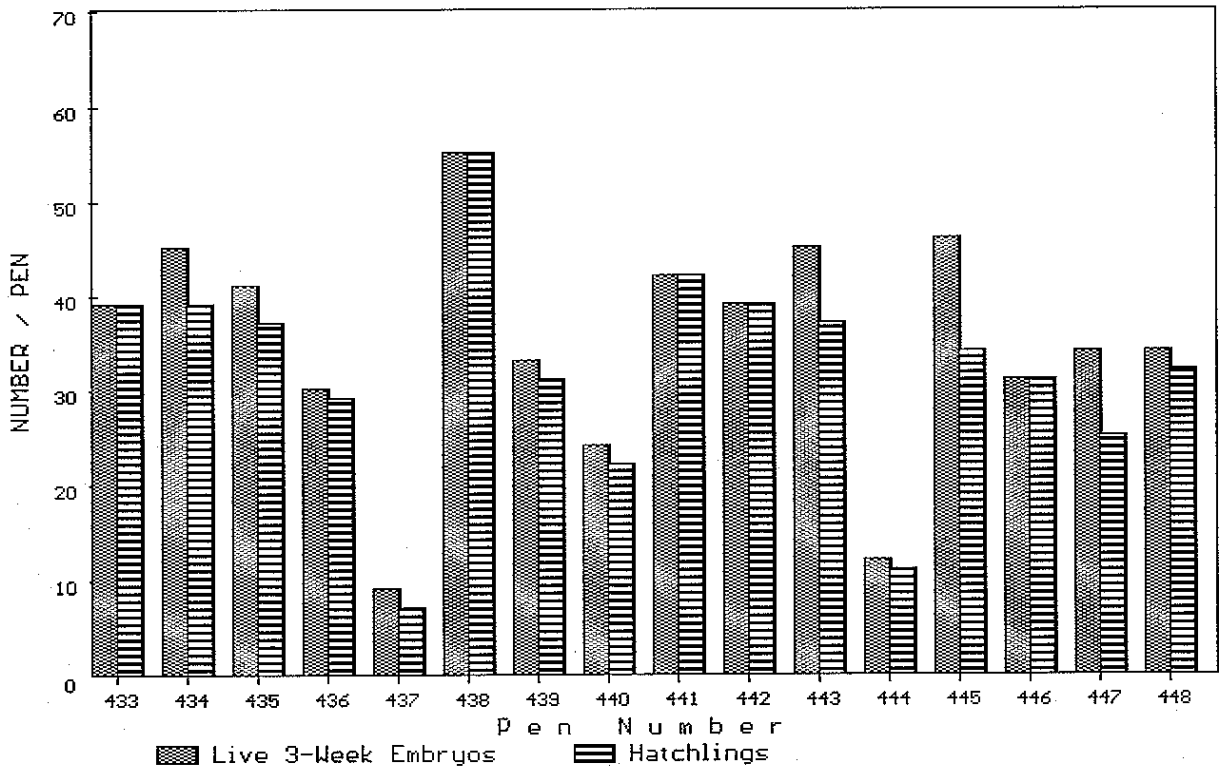
Appendix VII - Figure 5a
Hatchlings / Live 3-Week Embryos from a Northern Bobwhite
Reproduction Study with H-28548 - Control



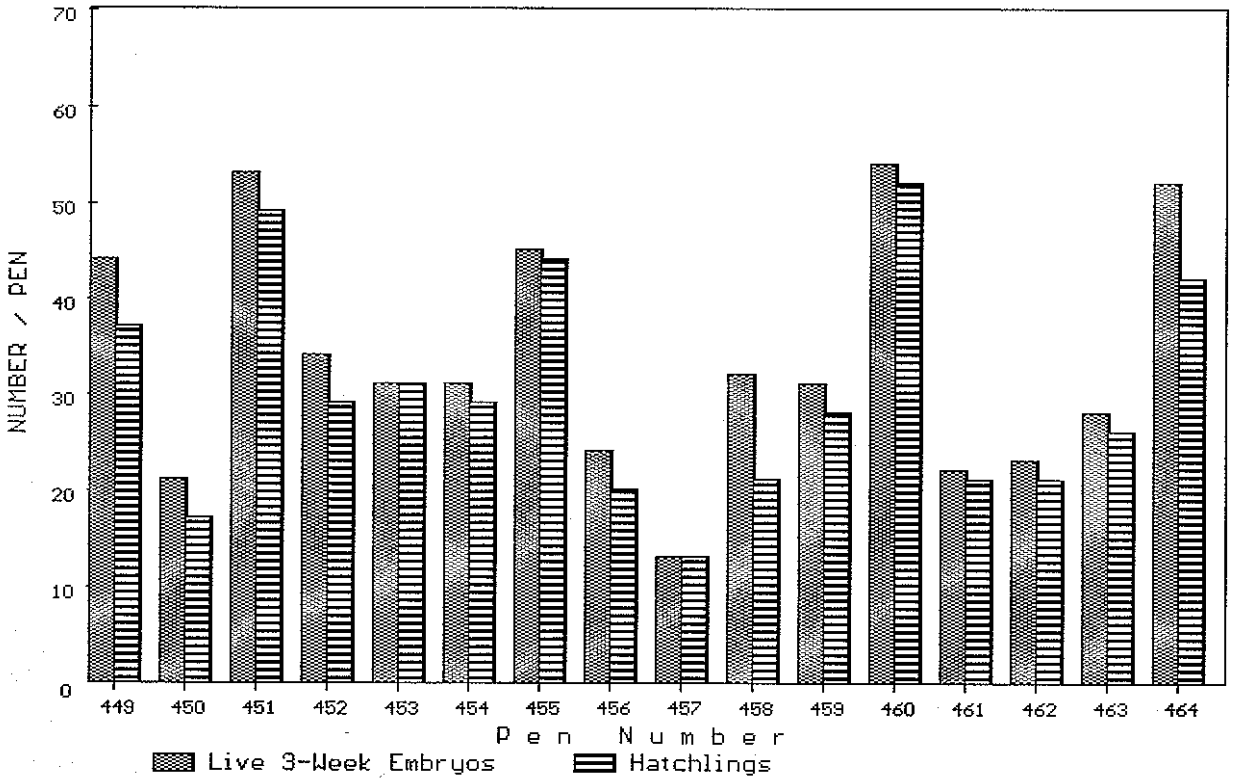
Appendix VII - Figure 5b
Hatchlings / Live 3-Week Embryos from a Northern Bobwhite
Reproduction Study with H-28548 - 100 PPM



Appendix VII - Figure 5c
Hatchlings / Live 3-Week Embryos from a Northern Bobwhite
Reproduction Study with H-28548 - 500 PPM



Appendix VII - Figure 5d
Hatchlings / Live 3-Week Embryos from a Northern Bobwhite
Reproduction Study with H-28548 - 1000 PPM



Reproductive Performance by Pen

Appendix VII - Table 6

14-Day Old Survivors / Hatchlings (%)

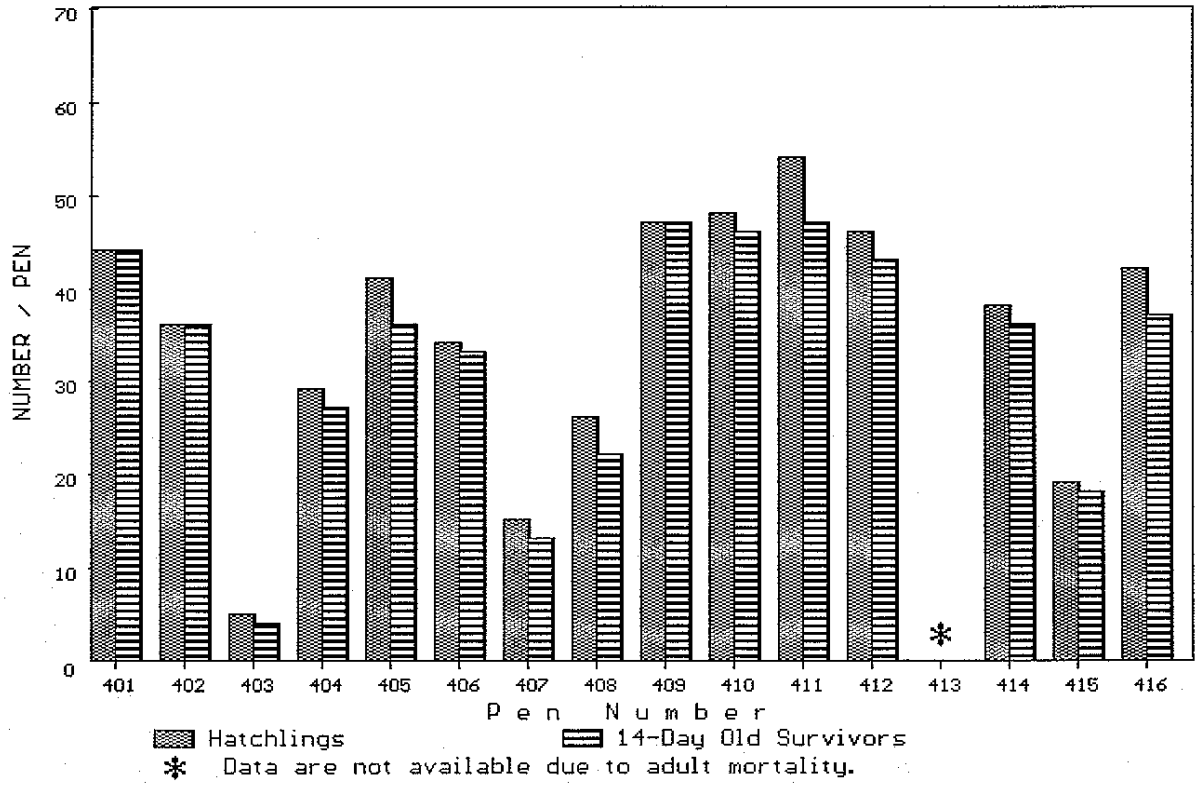
from a Northern Bobwhite Reproduction Study with H-28548

	0 PPM				100 PPM				500 PPM				1000 PPM			
Replicate	14-Day Old	Number Hatch.	%	Arcsin Trans.	14-Day Old	Number Hatch.	%	Arcsin Trans.	14-Day Old	Number Hatch.	%	Arcsin Trans.	14-Day Old	Number Hatch.	%	Arcsin Trans.
1	44	44	100	90.00	47	50	94	75.82	38	39	97	80.79	35	37	95	76.56
2	36	36	100	90.00	19	22	86	68.33	38	39	97	80.79	17	17	100	90.00
3	4	5	80	63.43	26	26	100	90.00	34	37	92	73.46	45	49	92	73.40
4	27	29	93	74.77	40	42	95	77.40	28	29	97	79.30	28	29	97	79.30
5	36	41	88	69.56	24	33	73	58.52	6	7	86	67.79	26	31	84	66.32
6	33	34	97	80.13	32	32	100	90.00	52	55	95	76.49	28	29	97	79.30
7	13	15	87	68.58	23	23	100	90.00	30	31	97	79.65	43	44	98	81.33
8	22	26	85	66.91	25	29	86	68.20	19	22	86	68.33	18	20	90	71.57
9	47	47	100	90.00	34	34	100	90.00	41	42	98	81.12	12	13	92	73.90
10	46	48	96	78.22	26	26	100	90.00	36	39	92	73.90	16	21	76	60.79
11	47	54	87	68.90	33	35	94	76.17	32	37	86	68.43	27	28	96	79.11
12	43	46	93	75.20	28	31	90	71.88	11	11	100	90.00	52	52	100	90.00
13	-	-	-	-	44	47	94	75.37	34	34	100	90.00	21	21	100	90.00
14	36	38	95	76.74	55	61	90	71.72	28	31	90	71.88	19	21	90	72.02
15	18	19	95	76.74	24	25	96	78.46	24	25	96	78.46	25	26	96	78.69
16	37	42	88	69.82	25	28	89	70.89	29	32	91	72.17	42	42	100	90.00
Total	489	524			505	544			480	510			454	480		
Mean	33	35	92	75.93	32	34	93	77.67	30	32	94	77.04	28	30	94	78.27
SD	13	14	6	8.61	10	11	7	9.77	11	12	5	6.85	12	12	7	8.72

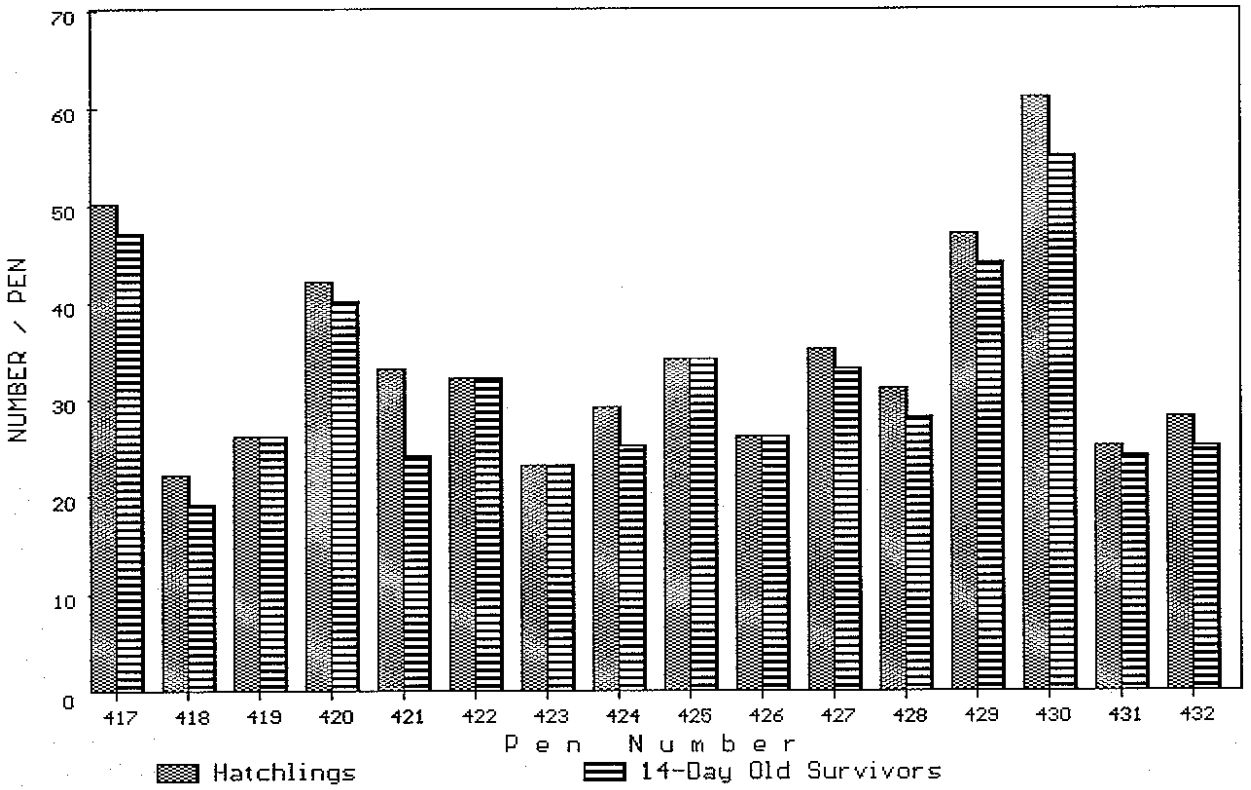
- Data are not available due to adult mortality.

Differences between the control and each treatment group were not significant ($p > 0.05$).

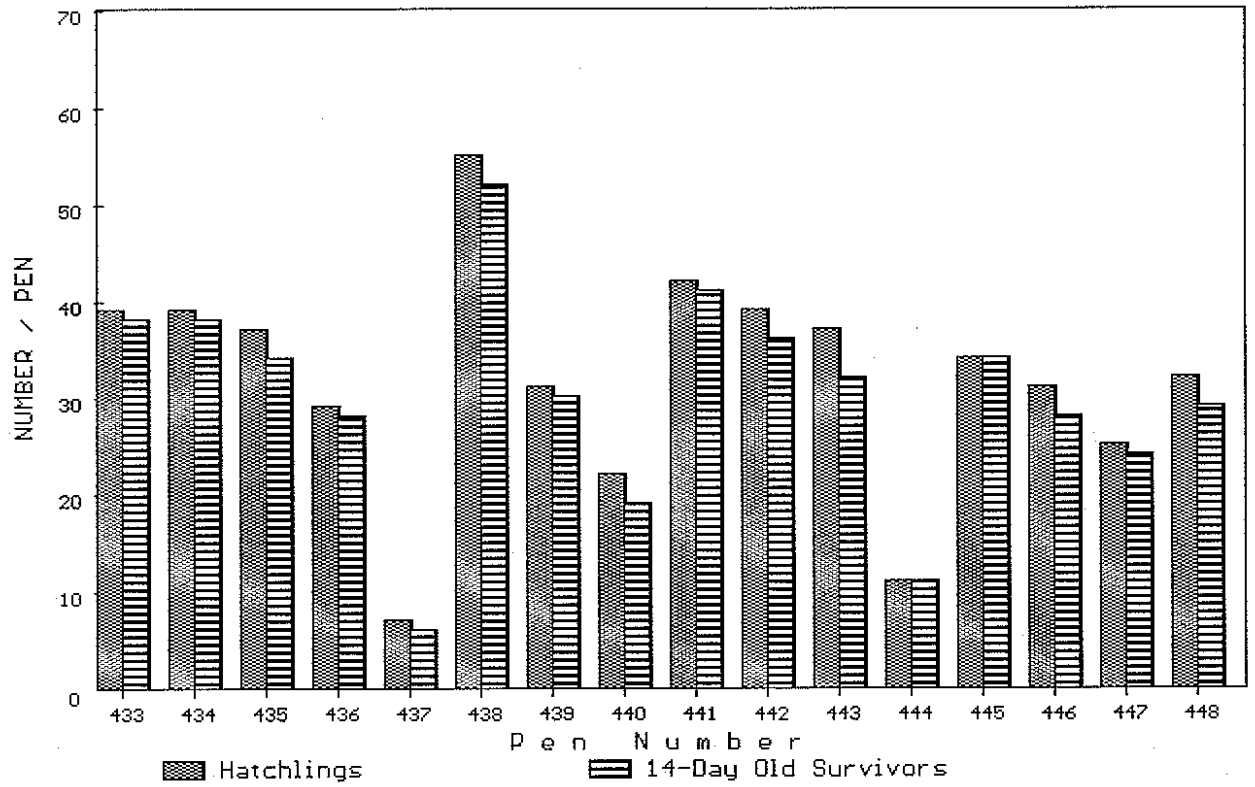
Appendix VII - Figure 6a
14-Day Old Survivors / Hatchlings from a Northern Bobwhite
Reproduction Study with H-28548 - Control



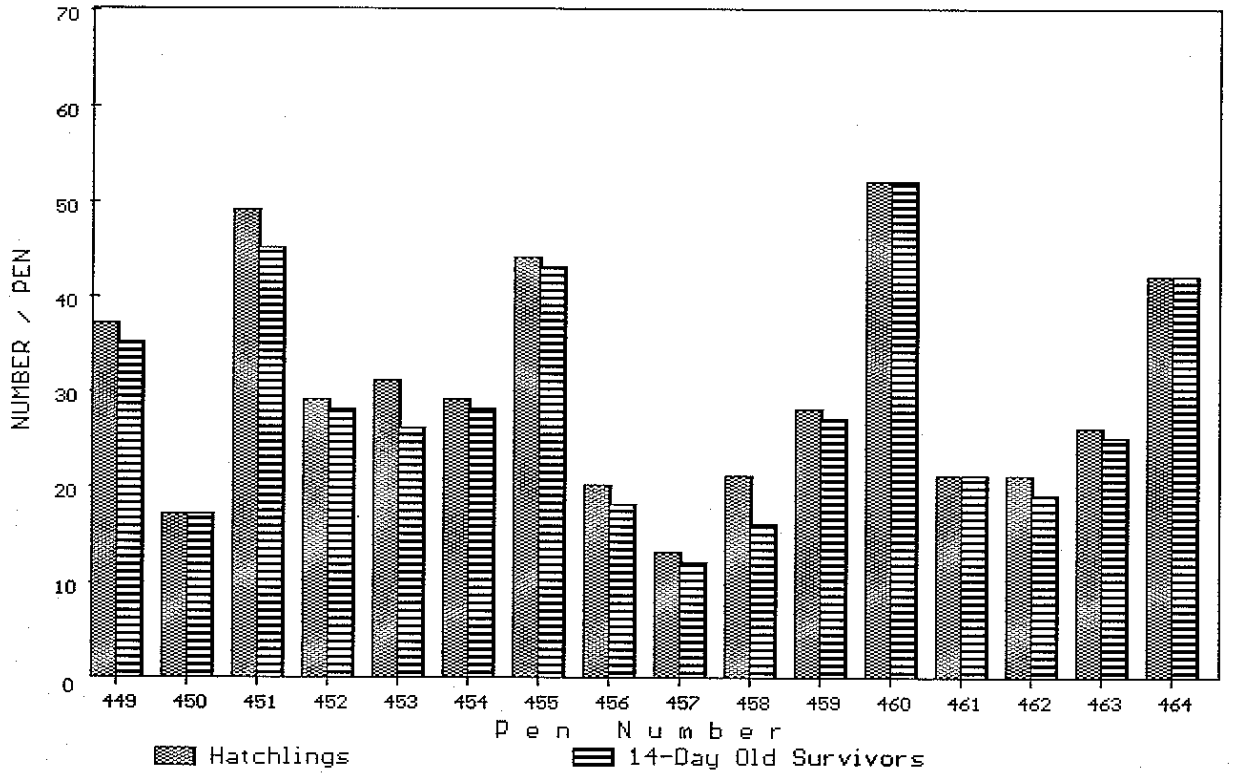
Appendix VII - Figure 6b
14-Day Old Survivors / Hatchlings from a Northern Bobwhite
Reproduction Study with H-28548 - 100 PPM



Appendix VII - Figure 6c
14-Day Old Survivors / Hatchlings from a Northern Bobwhite
Reproduction Study with H-28548 - 500 PPM



Appendix VII - Figure 6d
14-Day Old Survivors / Hatchlings from a Northern Bobwhite
Reproduction Study with H-28548 - 1000 PPM



Reproductive Performance by Pen

Appendix VII - Table 7

Hatchlings / Eggs Set (%)

from a Northern Bobwhite Reproduction Study with H-28548

	0 PPM				100 PPM				500 PPM				1000 PPM			
Replicate	Number Hatch.	Eggs Set	%	Arcsin Trans.	Number Hatch.	Eggs Set	%	Arcsin Trans.	Number Hatch.	Eggs Set	%	Arcsin Trans.	Number Hatch.	Eggs Set	%	Arcsin Trans.
1	44	47	94	75.37	50	50	100	90.00	39	39	100	90.00	37	47	79	62.53
2	36	40	90	71.57	22	40	55	47.87	39	45	87	68.58	17	22	77	61.53
3	5	8	63	52.24	26	48	54	47.39	37	41	90	71.80	49	53	92	74.05
4	29	31	94	75.29	42	49	86	67.79	29	30	97	79.48	29	34	85	67.45
5	41	46	89	70.75	33	41	80	63.79	7	9	78	61.87	31	31	100	90.00
6	34	36	94	76.37	32	40	80	63.43	55	62	89	70.37	29	35	83	65.54
7	15	16	94	75.52	23	32	72	57.97	31	62	50	45.00	44	45	98	81.43
8	26	31	84	66.32	29	53	55	47.71	22	25	88	69.73	20	24	83	65.91
9	47	48	98	81.70	34	40	85	67.21	42	42	100	90.00	13	21	62	51.89
10	48	50	96	78.46	26	46	57	48.75	39	39	100	90.00	21	50	42	40.40
11	54	57	95	76.74	35	42	83	65.91	37	46	80	63.75	28	31	90	71.88
12	46	49	94	75.67	31	33	94	75.75	11	12	92	73.22	52	59	88	69.85
13	-	-	-	-	47	47	100	90.00	34	51	67	54.74	21	22	95	77.69
14	38	39	97	80.79	61	63	97	79.74	31	31	100	90.00	21	23	91	72.85
15	19	19	100	90.00	25	40	63	52.24	25	42	60	50.49	26	29	90	71.24
16	42	50	84	66.42	28	35	80	63.43	32	35	91	72.98	42	53	79	62.90
Total	524	567			544	699			510	611			480	579		
Mean	35	38	91	74.21	34	44	78	64.31	32	38	86	71.38	30	36	83	67.95
SD	14	14	9	8.49	11	8	16	14.08	12	15	15	14.21	12	13	14	11.48

- Data are not available due to adult mortality.

Differences between the control and each treatment group were not significant ($p > 0.05$).

Reproductive Performance by Pen

Appendix VII - Table 8

14-Day Old Survivors / Eggs Set (%)

from a Northern Bobwhite Reproduction Study with H-28548

	0 PPM				100 PPM				500 PPM				1000 PPM			
Replicate	14-Day Old	Eggs Set	%	Arcsin Trans.	14-Day Old	Eggs Set	%	Arcsin Trans.	14-Day Old	Eggs Set	%	Arcsin Trans.	14-Day Old	Eggs Set	%	Arcsin Trans.
1	44	47	94	75.37	47	50	94	75.82	38	39	97	80.79	35	47	74	59.65
2	36	40	90	71.57	19	40	47	43.57	38	45	84	66.77	17	22	77	61.53
3	4	8	50	45.00	26	48	54	47.39	34	41	83	65.59	45	53	85	67.14
4	27	31	87	68.95	40	49	82	64.62	28	30	93	75.04	28	34	82	65.16
5	36	46	78	62.21	24	41	59	49.92	6	9	67	54.74	26	31	84	66.32
6	33	36	92	73.22	32	40	80	63.43	52	62	84	66.32	28	35	80	63.43
7	13	16	81	64.34	23	32	72	57.97	30	62	48	44.08	43	45	96	77.83
8	22	31	71	57.40	25	53	47	43.38	19	25	76	60.67	18	24	75	60.00
9	47	48	98	81.70	34	40	85	67.21	41	42	98	81.12	12	21	57	49.11
10	46	50	92	73.57	26	46	57	48.75	36	39	92	73.90	16	50	32	34.45
11	47	57	82	65.24	33	42	79	62.42	32	46	70	56.52	27	31	87	68.95
12	43	49	88	69.52	28	33	85	67.09	11	12	92	73.22	52	59	88	69.85
13	-	-	-	-	44	47	94	75.37	34	51	67	54.74	21	22	95	77.69
14	36	39	92	73.90	55	63	87	69.12	28	31	90	71.88	19	23	83	65.35
15	18	19	95	76.74	24	40	60	50.77	24	42	57	49.11	25	29	86	68.20
16	37	50	74	59.34	25	35	71	57.69	29	35	83	65.54	42	53	79	62.90
Total	489	567			505	699			480	611			454	579		
Mean	33	38	84	67.87	32	44	72	59.03	30	38	80	65.00	28	36	79	63.60
SD	13	14	12	9.25	10	8	16	10.72	11	15	15	10.96	12	13	15	10.36

- Data are not available due to adult mortality.

Differences between the control and each treatment group were not significant ($p > 0.05$).

Reproductive Performance by Pen

Appendix VII - Table 9

Hatchlings / Maximum Set (%)

from a Northern Bobwhite Reproduction Study with H-28548

	0 PPM				100 PPM				500 PPM				1000 PPM			
Replicate	Number Hatch.	Max. Set	%	Arcsin Trans.	Number Hatch.	Max. Set	%	Arcsin Trans.	Number Hatch.	Max. Set	%	Arcsin Trans.	Number Hatch.	Max. Set	%	Arcsin Trans.
1	44	63	70	56.69	50	63	79	62.98	39	63	62	51.89	37	63	59	50.03
2	36	63	57	49.11	22	63	35	36.22	39	63	62	51.89	17	63	27	31.30
3	5	63	8	16.36	26	63	41	39.97	37	63	59	50.03	49	63	78	61.87
4	29	63	46	42.72	42	63	67	54.74	29	63	46	42.72	29	63	46	42.72
5	41	63	65	53.78	33	63	52	46.36	7	63	11	19.47	31	63	49	44.55
6	34	63	54	47.28	32	63	51	45.45	55	63	87	69.12	29	63	46	42.72
7	15	63	24	29.21	23	63	37	37.17	31	63	49	44.55	44	63	70	56.69
8	26	63	41	39.97	29	63	46	42.72	22	63	35	36.22	20	63	32	34.29
9	47	63	75	59.74	34	63	54	47.28	42	63	67	54.74	13	63	21	27.02
10	48	63	76	60.79	26	63	41	39.97	39	63	62	51.89	21	63	33	35.26
11	54	63	86	67.79	35	63	56	48.19	37	63	59	50.03	28	63	44	41.81
12	46	63	73	58.70	31	63	49	44.55	11	63	17	24.70	52	63	83	65.30
13	-	-	-	-	47	63	75	59.74	34	63	54	47.28	21	63	33	35.26
14	38	63	60	50.95	61	63	97	79.74	31	63	49	44.55	21	63	33	35.26
15	19	63	30	33.31	25	63	40	39.05	25	63	40	39.05	26	63	41	39.97
16	42	63	67	54.74	28	63	44	41.81	32	63	51	45.45	42	63	67	54.74
Total	524	945			544	1008			510	1008			480	1008		
Mean	35	63	55	48.08	34	63	54	47.87	32	63	51	45.22	30	63	48	43.68
SD	14	0	22	13.72	11	0	17	11.45	12	0	19	11.71	12	0	19	11.20

- Data are not available due to adult mortality.

Differences between the control and each treatment group were not significant ($p > 0.05$).

Reproductive Performance by Pen

Appendix VII - Table 10

14-Day Old Survivors / Maximum Set (%)

from a Northern Bobwhite Reproduction Study with H-28548

	0 PPM				100 PPM				500 PPM				1000 PPM			
Replicate	14-Day Old	Max. Set	%	Arcsin Trans.	14-Day Old	Max. Set	%	Arcsin Trans.	14-Day Old	Max. Set	%	Arcsin Trans.	14-Day Old	Max. Set	%	Arcsin Trans.
1	44	63	70	56.69	47	63	75	59.74	38	63	60	50.95	35	63	56	48.19
2	36	63	57	49.11	19	63	30	33.31	38	63	60	50.95	17	63	27	31.30
3	4	63	6	14.59	26	63	41	39.97	34	63	54	47.28	45	63	71	57.69
4	27	63	43	40.89	40	63	63	52.83	28	63	44	41.81	28	63	44	41.81
5	36	63	57	49.11	24	63	38	38.11	6	63	10	17.98	26	63	41	39.97
6	33	63	52	46.36	32	63	51	45.45	52	63	83	65.30	28	63	44	41.81
7	13	63	21	27.02	23	63	37	37.17	30	63	48	43.64	43	63	68	55.71
8	22	63	35	36.22	25	63	40	39.05	19	63	30	33.31	18	63	29	32.31
9	47	63	75	59.74	34	63	54	47.28	41	63	65	53.78	12	63	19	25.88
10	46	63	73	58.70	26	63	41	39.97	36	63	57	49.11	16	63	25	30.26
11	47	63	75	59.74	33	63	52	46.36	32	63	51	45.45	27	63	43	40.89
12	43	63	68	55.71	28	63	44	41.81	11	63	17	24.70	52	63	83	65.30
13	-	-	-	-	44	63	70	56.69	34	63	54	47.28	21	63	33	35.26
14	36	63	57	49.11	55	63	87	69.12	28	63	44	41.81	19	63	30	33.31
15	18	63	29	32.31	24	63	38	38.11	24	63	38	38.11	25	63	40	39.05
16	37	63	59	50.03	25	63	40	39.05	29	63	46	42.72	42	63	67	54.74
Total	489	945			505	1008			480	1008			454	1008		
Mean	33	63	52	45.69	32	63	50	45.25	30	63	48	43.39	28	63	45	42.09
SD	13	0	21	13.22	10	0	16	9.76	11	0	18	11.25	12	0	19	11.31

- Data are not available due to adult mortality.

Differences between the control and each treatment group were not significant ($p > 0.05$).

Reproductive Performance by Week and Pen

Appendix VIII - Table 1a

Eggs Laid by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	Totals
	LOT[1]																	
	A	0	0	0	1	0	0	0	0	0	1	4	1	-	1	0	0	8
	B	3	1	0	2	1	1	2	0	2	5	5	4	-	3	0	4	33
	C	4	3	0	2	4	3	1	1	5	4	5	5	-	2	0	5	44
	D	5	4	0	2	5	3	3	2	6	6	6	5	-	3	1	5	56
Control	E	6	5	0	4	6	5	1	4	6	6	7	6	-	5	2	7	70
	F	6	6	0	4	6	5	0	5	7	6	7	6	-	5	4	7	74
	G	7	6	1	5	7	6	2	5	7	7	7	7	-	6	3	7	83
	H	7	7	2	4	7	7	3	5	7	7	7	7	-	6	5	7	88
	I	7	7	3	6	7	7	5	6	7	7	7	7	-	7	5	7	95
	J	7	7	4	6	7	7	4	7	7	7	7	7	-	7	5	7	96
	Totals	52	46	10	36	50	44	21	35	54	56	62	55	-	45	25	56	647

- Data are not available due to adult mortality

[1] LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 1b

Eggs Laid by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	Totals
	LOT[1]																	
	A	3	0	0	1	0	0	0	1	0	0	0	0	0	9	0	0	14
	B	4	3	1	3	2	1	0	5	0	2	0	2	2	5	1	0	31
	C	4	3	4	5	3	1	1	5	2	4	3	4	4	7	2	2	54
	D	5	4	6	5	4	4	2	6	3	5	4	3	5	6	4	3	69
100	E	6	6	7	6	5	6	4	7	6	6	6	4	7	6	5	5	92
	F	6	6	7	6	5	6	5	7	6	7	6	5	7	7	5	6	97
	G	7	7	6	7	6	7	5	7	6	7	7	5	7	7	6	4	101
	H	7	6	7	7	6	7	6	7	7	7	7	5	7	7	7	5	105
	I	7	7	7	7	7	6	7	7	7	7	7	5	7	7	7	7	109
	J	7	7	7	7	7	7	6	7	7	7	6	5	7	7	7	7	108
	Totals	56	49	52	54	45	45	36	59	44	52	46	38	53	68	44	39	780

[1] LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 1c

Eggs Laid by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	Totals
	LOT[1]																	
	A	0	0	1	0	0	7	9	0	0	0	0	0	6	0	0	0	23
	B	3	3	3	0	0	6	7	2	3	0	3	0	6	0	0	3	39
	C	3	4	2	0	0	6	7	2	3	2	4	0	5	2	2	3	45
	D	4	5	3	1	0	7	7	1	3	3	4	0	6	3	4	4	55
500	E	5	6	5	4	1	7	7	1	5	5	6	0	7	1	5	4	69
	F	6	6	6	5	1	7	7	3	6	6	6	0	7	5	7	4	82
	G	5	7	6	6	2	7	7	5	6	6	7	0	7	5	7	5	88
	H	5	7	7	5	2	7	7	4	6	7	7	5	6	6	7	6	94
	I	6	7	7	7	3	7	7	6	7	7	6	4	7	7	7	5	100
	J	6	7	6	6	5	6	5	6	7	7	7	5	0	7	7	6	93
	Totals	43	52	46	34	14	67	70	30	46	43	50	14	57	36	46	40	688

[1]LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 1d

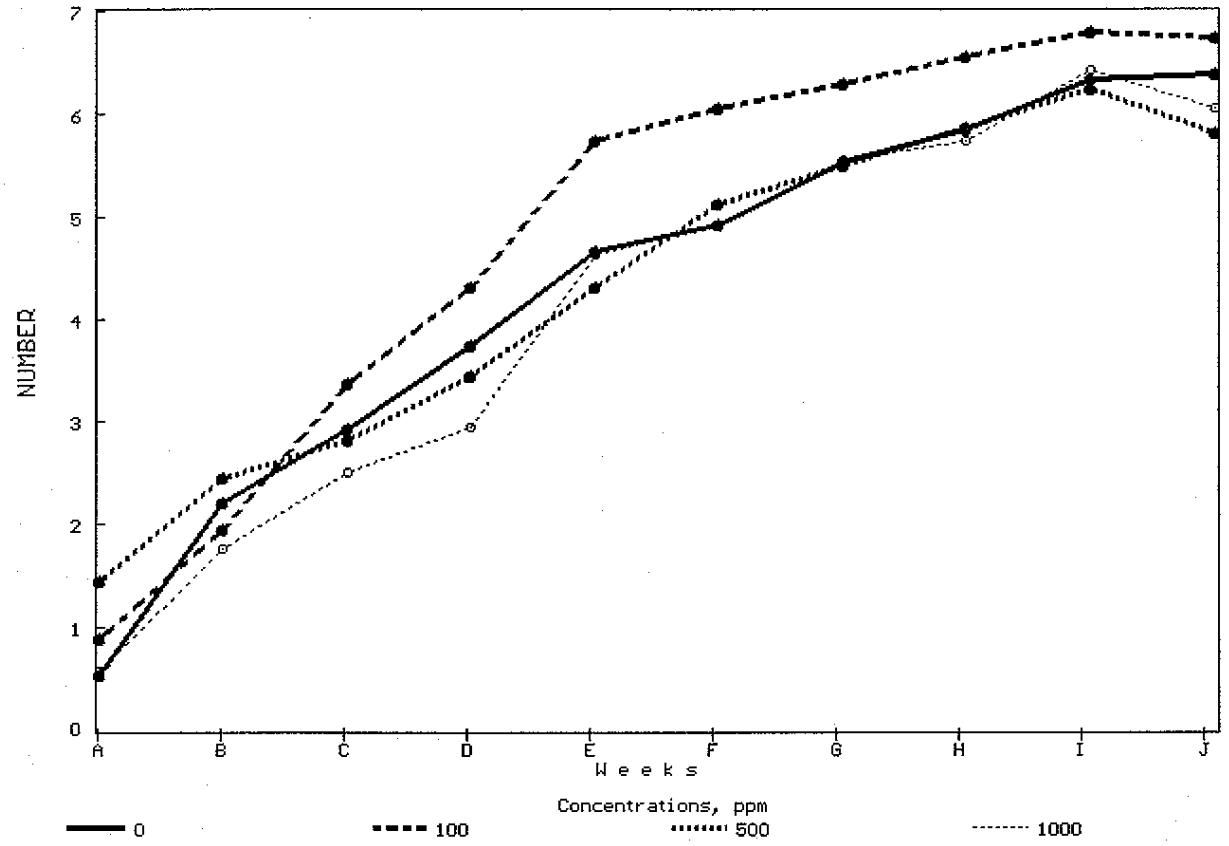
Eggs Laid by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

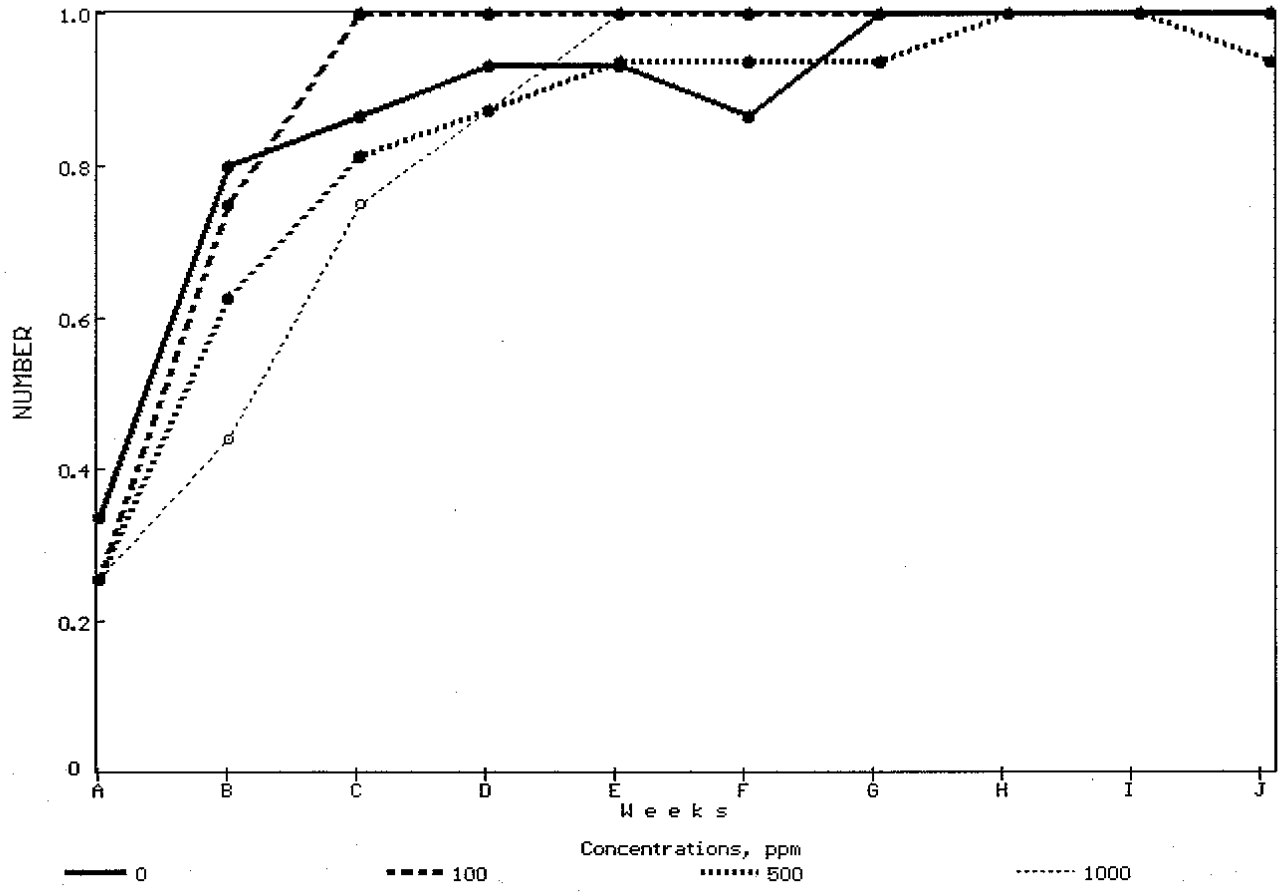
Experimental Group (ppm)		PENS																
		449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	Totals
	LOT[1]																	
	A	0	0	1	0	0	1	0	0	0	0	0	5	0	0	0	2	9
	B	4	0	4	0	0	2	3	0	0	5	0	6	0	0	0	4	28
	C	4	0	5	1	2	4	3	1	0	6	1	5	0	0	2	6	40
	D	5	1	6	2	3	3	3	2	0	6	1	7	0	1	2	5	47
1000	E	7	3	7	4	4	4	6	3	3	6	4	7	3	3	3	7	74
	F	7	3	7	4	5	5	7	3	3	6	4	7	4	3	4	7	79
	G	7	5	7	7	4	5	7	5	3	7	6	7	3	4	5	7	89
	H	7	4	7	7	6	6	7	4	5	6	5	7	4	5	5	7	92
	I	7	5	8	6	7	7	7	5	5	7	7	7	6	6	6	7	103
	J	7	5	6	7	6	6	6	5	5	7	7	7	5	5	6	7	97
	Totals	55	26	58	38	37	43	49	28	24	56	35	65	25	27	33	59	658

[1] LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

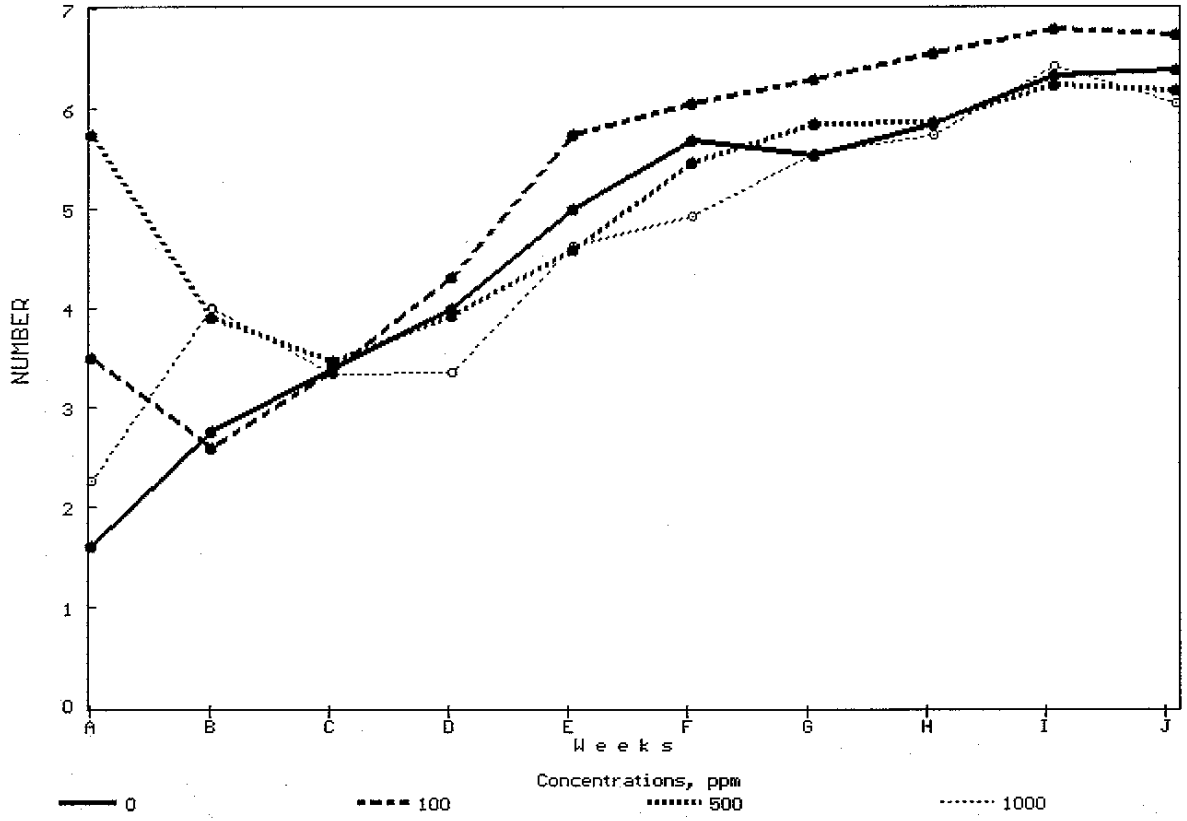
Appendix VIII - Figure 1
Eggs Laid per Hen from a Northern Bobwhite Reproduction Study with H-28548



Appendix VIII - Figure 2
Hens Laying per Pen from a Northern Bobwhite Reproduction Study with H-28548



Appendix VIII - Figure 3
Eggs per Laying Hen from a Northern Bobwhite Reproduction Study with H-28548



Reproductive Performance by Week and Pen

Appendix VIII - Table 2a

Eggs Cracked by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	Totals
	LOT[1]																	
	A	0	0	0	0	0	0	0	0	0	0	0	0	-	1	0	0	1
	B	0	0	0	0	0	0	1	0	0	0	0	0	-	0	0	0	1
	C	0	0	0	0	0	1	0	0	0	0	0	0	-	0	0	0	1
	D	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0
Control	E	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0
	F	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0
	G	0	0	0	0	0	1	0	0	0	0	0	0	-	0	1	0	2
	H	0	0	0	0	0	1	0	0	0	1	0	0	-	0	0	1	3
	I	0	0	0	0	0	0	0	0	1	0	0	1	-	0	1	0	3
	J	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0
	Totals	0	0	0	0	0	3	1	0	1	1	0	1	-	1	2	1	11

- Data are not available due to adult mortality

[1]LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 2b

Eggs Cracked by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	Totals
	LOT[1]																	
	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	D	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
100	E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	G	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	J	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Totals	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3

[1]LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 2c

Eggs Cracked by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	Totals
	LOT[1]																	
	A	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500	E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	G	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	I	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
	J	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
	Totals	0	2	0	0	2	0	1	0	0	0	0	0	0	1	0	0	6

[1] LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 2d

Eggs Cracked by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	Totals
	LOT[1]																	
	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	C	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
	D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1000	E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	H	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	3
	I	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
	J	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
	Totals	2	0	0	0	2	2	0	0	0	1	0	1	0	0	0	0	8

[1]LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 3a

Eggs Set by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	Totals
	LOT[1]																	
	A	0	0	0	1	0	0	0	0	0	1	3	1	-	0	0	0	6
	B	3	0	0	1	1	0	1	0	2	4	5	3	-	2	0	3	25
	C	3	3	0	2	3	2	0	1	4	4	4	5	-	2	0	5	38
	D	5	3	0	1	5	2	3	1	6	5	6	4	-	2	1	4	48
Control	E	5	5	0	4	5	5	0	4	5	6	6	6	-	5	1	7	64
	F	6	5	0	3	6	4	0	4	7	5	7	5	-	4	3	6	65
	G	6	6	0	5	6	5	1	5	6	7	6	7	-	6	1	7	74
	H	7	6	2	3	7	5	3	4	7	5	7	6	-	5	5	5	77
	I	5	6	2	6	6	7	4	6	4	7	6	6	-	7	3	7	82
	J	7	6	4	5	7	6	4	6	7	6	7	6	-	6	5	6	88
	Totals	47	40	8	31	46	36	16	31	48	50	57	49	-	39	19	50	567

- Data are not available due to adult mortality

[1] LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 3b

Eggs Set by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	Totals
	LOT[1]																	
	A	1	0	0	1	0	0	0	1	0	0	0	0	0	9	0	0	12
	B	4	2	1	2	2	0	0	4	0	0	0	1	2	4	1	0	23
	C	3	3	3	5	2	1	0	5	1	4	2	4	3	7	1	2	46
	D	5	2	6	4	4	3	2	5	3	4	4	2	5	5	4	2	60
100	E	5	6	6	6	4	6	3	6	5	6	5	4	6	6	4	5	83
	F	6	4	7	5	5	5	5	6	6	6	6	4	7	6	5	5	88
	G	6	6	5	7	5	7	4	7	5	7	6	5	6	7	5	4	92
	H	7	5	7	6	6	6	6	6	7	6	7	4	7	6	7	4	97
	I	6	6	6	7	6	6	6	7	6	7	6	5	5	7	6	7	99
	J	7	6	7	6	7	6	6	6	7	6	6	4	6	6	7	6	99
	Totals	50	40	48	49	41	40	32	53	40	46	42	33	47	63	40	35	699

[1]LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 3c

Eggs Set by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	Totals
	LOT[1]																	
	A	0	0	0	0	0	7	7	0	0	0	0	0	4	0	0	0	18
	B	3	2	3	0	0	5	7	1	3	0	3	0	6	0	0	2	35
	C	2	4	1	0	0	6	6	2	2	2	3	0	4	1	1	3	37
	D	4	4	3	0	0	6	7	0	3	2	4	0	6	2	4	3	48
500	E	4	6	4	4	0	7	6	1	4	5	5	0	6	1	4	4	61
	F	6	5	6	4	1	6	7	2	6	5	6	0	7	4	7	3	75
	G	4	6	5	6	1	7	6	5	5	6	6	0	6	5	6	5	79
	H	5	6	7	4	2	6	7	3	6	6	7	4	6	5	7	5	86
	I	5	7	6	7	1	7	6	6	6	7	5	4	6	7	6	5	91
	J	6	5	6	5	4	5	3	5	7	6	7	4	0	6	7	5	81
	Totals	39	45	41	30	9	62	62	25	42	39	46	12	51	31	42	35	611

[1] LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 3d

Eggs Set by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	Totals
	LOT[1]																	
	A	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	2	7
	B	4	0	4	0	0	1	3	0	0	4	0	5	0	0	0	3	24
	C	2	0	4	1	1	3	2	1	0	6	0	5	0	0	1	6	32
	D	5	0	6	1	3	2	3	1	0	5	1	6	0	0	2	4	39
1000	E	5	3	6	4	3	4	5	3	2	6	3	7	2	3	2	7	65
	F	7	2	7	3	5	4	7	2	3	5	4	6	4	2	4	6	71
	G	5	5	6	7	3	5	6	5	2	7	5	7	2	4	4	7	80
	H	7	3	7	6	5	5	7	3	5	4	5	5	4	4	5	6	81
	I	6	5	7	6	5	7	6	5	4	7	6	7	5	6	5	6	93
	J	6	4	6	6	6	4	6	4	5	6	7	6	5	4	6	6	87
	Totals	47	22	53	34	31	35	45	24	21	50	31	59	22	23	29	53	579

[1]LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 4a

Viable Embryos by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	Totals
	LOT[1]																	
	A	0	0	0	0	0	0	0	0	0	1	1	0	-	0	0	0	2
	B	3	0	0	1	1	0	1	0	2	4	5	3	-	2	0	1	23
	C	3	2	0	2	3	2	0	0	4	4	4	5	-	2	0	5	36
	D	5	3	0	1	5	2	3	1	6	5	6	4	-	2	1	4	48
Control	E	5	5	0	4	4	5	0	4	5	6	6	6	-	4	1	7	62
	F	6	5	0	3	6	4	0	4	7	5	7	5	-	4	3	6	65
	G	6	6	0	5	6	5	1	5	6	7	6	7	-	6	1	5	72
	H	5	6	2	3	7	5	3	4	7	5	7	6	-	5	5	2	72
	I	5	6	2	6	6	6	4	6	4	7	6	6	-	7	3	7	81
	J	7	5	4	5	7	6	4	6	7	6	7	6	-	6	5	6	87
	Totals	45	38	8	30	45	35	16	30	48	50	55	48	-	38	19	43	548

- Data are not available due to adult mortality

[1] LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 4b

Viable Embryos by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	Totals
	LOT[1]																	
	A	1	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	10
	B	4	2	0	2	0	0	0	3	0	0	0	0	2	4	0	0	17
	C	3	3	0	4	1	0	0	5	1	4	0	4	3	7	0	0	35
	D	5	2	0	3	3	0	0	5	3	4	1	2	5	5	4	2	44
100	E	5	6	0	6	4	5	0	5	5	5	5	4	6	6	4	5	71
	F	6	4	6	5	5	5	1	3	6	6	6	4	7	5	5	5	79
	G	6	6	5	7	5	5	4	7	5	5	6	5	6	7	5	4	88
	H	7	5	7	6	6	6	6	5	7	6	7	4	7	6	7	4	96
	I	6	6	6	7	6	6	6	6	6	6	6	5	5	7	6	6	96
	J	7	6	7	6	7	6	6	5	7	6	6	4	6	6	7	6	98
	Totals	50	40	31	46	37	33	23	44	40	42	37	32	47	62	38	32	634

[1] LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 4c

Viable Embryos by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
	LOT[1]	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	Totals
	A	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
	B	3	2	3	0	0	5	0	0	3	0	3	0	5	0	0	1	25
	C	2	4	1	0	0	6	0	2	2	2	3	0	4	1	0	3	30
	D	4	4	3	0	0	6	0	0	3	2	4	0	6	2	2	3	39
500	E	4	6	4	4	0	6	5	1	4	5	5	0	6	1	4	4	59
	F	6	5	6	4	1	6	6	2	6	5	6	0	7	4	7	3	74
	G	4	6	5	6	1	7	6	5	5	6	6	0	6	5	6	5	79
	H	5	6	7	4	2	5	7	3	6	6	6	4	6	5	6	5	83
	I	5	7	6	7	1	7	6	6	6	7	5	4	6	7	4	5	89
	J	6	5	6	5	4	5	3	5	7	6	7	4	0	6	6	5	80
	Totals	39	45	41	30	9	55	33	24	42	39	45	12	46	31	35	34	560

[1]LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 4d

Viable Embryos by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	Totals
	LOT[1]																	
	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
	B	4	0	4	0	0	0	3	0	0	2	0	5	0	0	0	3	21
	C	2	0	4	1	1	3	2	1	0	5	0	5	0	0	1	6	31
	D	4	0	6	1	3	2	3	1	0	5	1	6	0	0	2	4	38
1000	E	5	3	6	4	3	3	5	3	0	6	3	7	2	3	2	7	62
	F	7	2	7	3	5	4	7	2	0	4	4	6	4	2	4	6	67
	G	4	5	6	7	3	3	6	5	0	5	5	7	2	4	3	7	72
	H	7	2	7	6	5	5	7	3	4	4	5	5	4	4	5	6	79
	I	5	5	7	6	5	7	6	5	4	5	6	7	5	6	5	6	90
	J	6	4	6	6	6	4	6	4	5	3	7	6	5	4	6	5	83
	Totals	44	21	53	34	31	31	45	24	13	39	31	54	22	23	28	52	545

[1] LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 5a

Live Three-Week Embryos by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
	LOT[1]	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	Totals
	A	0	0	0	0	0	0	0	0	0	1	1	0	-	0	0	0	2
	B	2	0	0	1	1	0	1	0	2	4	5	3	-	2	0	1	22
	C	3	2	0	2	3	2	0	0	4	4	4	5	-	2	0	5	36
	D	5	3	0	1	5	2	3	1	6	5	6	4	-	2	1	4	48
Control	E	5	5	0	4	4	5	0	4	5	6	5	6	-	4	1	7	61
	F	6	5	0	3	6	4	0	4	7	5	7	5	-	4	3	6	65
	G	6	6	0	5	6	5	1	5	6	7	6	7	-	6	1	5	72
	H	5	6	2	3	7	5	3	4	7	5	7	6	-	5	5	2	72
	I	5	6	2	6	5	6	4	6	4	6	6	6	-	7	3	7	79
	J	7	5	4	5	7	6	4	5	7	6	7	6	-	6	5	5	85
	Totals	44	38	8	30	44	35	16	29	48	49	54	48	-	38	19	42	542

- Data are not available due to adult mortality

[1]LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 5b

Live Three-Week Embryos by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	Totals
	LOT[1]																	
	A	1	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	10
	B	4	2	0	2	0	0	0	3	0	0	0	0	2	4	0	0	17
	C	3	3	0	4	1	0	0	5	1	4	0	4	3	7	0	0	35
	D	5	2	0	3	3	0	0	5	3	4	1	2	5	5	4	2	44
100	E	5	6	0	6	4	5	0	5	5	5	5	4	6	6	4	5	71
	F	6	4	6	5	5	5	1	3	6	5	6	4	7	5	5	5	78
	G	6	6	5	7	5	5	4	6	5	5	6	5	6	7	5	4	87
	H	7	5	7	6	6	6	6	5	7	6	7	4	7	6	7	4	96
	I	6	6	6	7	6	6	6	6	6	6	6	5	5	7	6	6	96
	J	7	6	7	6	7	6	6	5	7	6	6	4	6	6	7	6	98
	Totals	50	40	31	46	37	33	23	43	40	41	37	32	47	62	38	32	632

[1] LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 5c

Live Three-Week Embryos by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	Totals
	LOT[1]																	
	A	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
	B	3	2	3	0	0	5	0	0	3	0	3	0	5	0	0	1	25
	C	2	4	1	0	0	6	0	2	2	2	3	0	4	1	0	3	30
	D	4	4	3	0	0	6	0	0	3	2	4	0	6	2	2	3	39
500	E	4	6	4	4	0	6	5	1	4	5	5	0	6	1	3	4	58
	F	6	5	6	4	1	6	6	2	6	5	6	0	7	4	7	3	74
	G	4	6	5	6	1	7	6	5	5	6	6	0	6	5	6	5	79
	H	5	6	7	4	2	5	7	3	6	6	6	4	6	5	6	5	83
	I	5	7	6	7	1	7	6	6	6	7	5	4	6	7	4	5	89
	J	6	5	6	5	4	5	3	5	7	6	7	4	0	6	6	5	80
	Totals	39	45	41	30	9	55	33	24	42	39	45	12	46	31	34	34	559

[1] LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 5d

Live Three-Week Embryos by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	Totals
	LOT[1]																	
	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
	B	4	0	4	0	0	0	3	0	0	2	0	5	0	0	0	3	21
	C	2	0	4	1	1	3	2	1	0	5	0	5	0	0	1	6	31
	D	4	0	6	1	3	2	3	1	0	5	1	6	0	0	2	4	38
1000	E	5	3	6	4	3	3	5	3	0	6	3	7	2	3	2	7	62
	F	7	2	7	3	5	4	7	2	0	3	4	6	4	2	4	6	66
	G	4	5	6	7	3	3	6	5	0	5	5	7	2	4	3	7	72
	H	7	2	7	6	5	5	7	3	4	2	5	5	4	4	5	6	77
	I	5	5	7	6	5	7	6	5	4	3	6	7	5	6	5	6	88
	J	6	4	6	6	6	4	6	4	5	1	7	6	5	4	6	5	81
	Totals	44	21	53	34	31	31	45	24	13	32	31	54	22	23	28	52	538

[1] LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 6a

Hatchlings by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	Totals
	LOT[1]																	
	A	0	0	0	0	0	0	0	0	0	1	1	0	-	0	0	0	2
	B	2	0	0	1	0	0	1	0	2	4	5	1	-	2	0	1	19
	C	3	2	0	2	1	2	0	0	4	3	4	5	-	2	0	5	33
	D	5	3	0	1	5	2	3	1	6	5	6	4	-	2	1	4	48
Control	E	5	5	0	4	4	5	0	4	5	6	5	6	-	4	1	7	61
	F	6	4	0	3	6	4	0	3	7	5	7	5	-	4	3	6	63
	G	6	6	0	5	6	5	1	5	6	7	6	7	-	6	1	5	72
	H	5	6	2	3	7	4	3	4	6	5	7	6	-	5	5	2	70
	I	5	6	0	6	5	6	3	5	4	6	6	6	-	7	3	7	75
	J	7	4	3	4	7	6	4	4	7	6	7	6	-	6	5	5	81
	Totals	44	36	5	29	41	34	15	26	47	48	54	46	-	38	19	42	524

- Data are not available due to adult mortality

[1]LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 6b

Hatchlings by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	Totals
	LOT[1]																	
	A	1	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	10
	B	4	2	0	2	0	0	0	3	0	0	0	0	2	4	0	0	17
	C	3	3	0	4	1	0	0	4	1	4	0	3	3	7	0	0	33
	D	5	2	0	3	1	0	0	3	3	4	1	2	5	5	0	2	36
100	E	5	4	0	5	4	5	0	3	5	3	5	4	6	6	3	3	61
	F	6	3	6	4	5	5	1	2	6	2	6	4	7	5	4	4	70
	G	6	3	2	7	5	5	4	3	3	3	6	5	6	7	3	4	72
	H	7	0	5	5	5	6	6	3	5	1	6	4	7	5	5	3	73
	I	6	3	6	6	6	5	6	5	6	4	5	5	5	7	5	6	86
	J	7	2	7	6	6	6	6	3	5	5	6	4	6	6	5	6	86
	Totals	50	22	26	42	33	32	23	29	34	26	35	31	47	61	25	28	544

[1] LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 6c

Hatchlings by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	Totals
	LOT[1]																	
	A	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
	B	3	1	2	0	0	5	0	0	3	0	2	0	4	0	0	1	21
	C	2	4	1	0	0	6	0	2	2	2	3	0	3	1	0	3	29
	D	4	4	3	0	0	6	0	0	3	2	4	0	5	2	2	3	38
500	E	4	5	4	4	0	6	5	1	4	5	5	0	5	1	3	4	56
	F	6	5	6	4	0	6	6	2	6	5	6	0	4	4	7	3	70
	G	4	6	5	6	1	7	5	5	5	6	5	0	5	5	2	5	72
	H	5	5	6	3	2	5	6	3	6	6	3	3	4	5	4	4	70
	I	5	5	5	7	0	7	6	6	6	7	3	4	4	7	3	5	80
	J	6	4	5	5	4	5	3	3	7	6	6	4	0	6	4	4	72
	Totals	39	39	37	29	7	55	31	22	42	39	37	11	34	31	25	32	510

[1] LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 6d

Hatchlings by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	Totals
	LOT[1]																	
	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
	B	4	0	4	0	0	0	3	0	0	1	0	5	0	0	0	2	19
	C	1	0	4	1	1	3	2	1	0	4	0	5	0	0	1	5	28
	D	4	0	6	1	3	2	3	0	0	3	1	6	0	0	2	4	35
1000	E	5	2	6	2	3	3	5	3	0	5	3	7	2	3	1	7	57
	F	6	2	7	3	5	4	7	2	0	1	4	6	4	2	4	5	62
	G	3	4	6	7	3	3	6	4	0	4	4	7	2	4	3	5	65
	H	5	1	5	4	5	4	7	2	4	1	3	3	4	3	5	4	60
	I	4	5	6	6	5	6	5	5	4	1	6	7	4	5	4	3	76
	J	5	3	5	5	6	4	6	3	5	1	7	6	5	4	6	5	76
	Totals	37	17	49	29	31	29	44	20	13	21	28	52	21	21	26	42	480

[1] LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 7a

14-Day Old Survivors by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	Totals
	LOT[1]																	
	A	0	0	0	0	0	0	0	0	0	1	1	0	-	0	0	0	2
	B	2	0	0	1	0	0	1	0	2	4	5	1	-	1	0	1	18
	C	3	2	0	2	1	1	0	0	4	3	4	5	-	2	0	4	31
	D	5	3	0	1	5	2	2	1	6	5	5	4	-	1	1	4	45
Control	E	5	5	0	4	4	5	0	2	5	6	3	4	-	4	1	4	52
	F	6	4	0	2	6	4	0	3	7	5	7	4	-	4	2	6	60
	G	6	6	0	4	5	5	1	5	6	6	6	7	-	6	1	4	68
	H	5	6	1	3	7	4	3	3	6	5	6	6	-	5	5	2	67
	I	5	6	0	6	5	6	3	5	4	6	6	6	-	7	3	7	75
	J	7	4	3	4	3	6	3	3	7	5	4	6	-	6	5	5	71
	Totals	44	36	4	27	36	33	13	22	47	46	47	43	-	36	18	37	489

- Data are not available due to adult mortality

[1]LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 7b

14-Day Old Survivors by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	Totals
	LOT[1]																	
	A	1	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	10
	B	4	2	0	2	0	0	0	3	0	0	0	0	2	4	0	0	17
	C	3	2	0	4	1	0	0	4	1	4	0	3	3	7	0	0	32
	D	4	2	0	3	1	0	0	3	3	4	0	2	4	5	0	2	33
100	E	4	4	0	5	4	5	0	3	5	3	4	4	6	5	3	3	58
	F	6	3	6	4	5	5	1	2	6	2	6	4	7	5	4	3	69
	G	6	1	2	6	3	5	4	1	3	3	6	2	6	6	3	2	59
	H	7	0	5	5	3	6	6	3	5	1	6	4	7	2	4	3	67
	I	5	3	6	5	2	5	6	4	6	4	5	5	3	6	5	6	76
	J	7	2	7	6	5	6	6	2	5	5	6	4	6	6	5	6	84
	Totals	47	19	26	40	24	32	23	25	34	26	33	28	44	55	24	25	505

[1]LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 7c

14-Day Old Survivors by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	Totals
	LOT[1]																	
	A	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
	B	3	1	2	0	0	5	0	0	3	0	1	0	4	0	0	0	19
	C	2	4	1	0	0	6	0	1	2	2	3	0	3	1	0	3	28
	D	4	4	3	0	0	6	0	0	3	2	4	0	5	2	2	2	37
500	E	4	5	4	3	0	6	4	0	4	5	5	0	5	1	3	4	53
	F	6	5	5	4	0	5	6	2	6	5	5	0	4	3	6	3	65
	G	4	5	4	6	0	6	5	5	5	5	4	0	5	4	2	5	65
	H	5	5	5	3	2	5	6	3	6	6	1	3	4	5	4	4	67
	I	4	5	5	7	0	6	6	5	5	6	3	4	4	7	3	4	74
	J	6	4	5	5	4	5	3	3	7	5	6	4	0	5	4	4	70
	Totals	38	38	34	28	6	52	30	19	41	36	32	11	34	28	24	29	480

[1] LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Reproductive Performance by Week and Pen

Appendix VIII - Table 7d

14-Day Old Survivors by Week and Pen

from a Northern Bobwhite Reproduction Study with H-28548

Experimental Group (ppm)		PENS																
		449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	Totals
	LOT[1]																	
	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
	B	4	0	4	0	0	0	3	0	0	1	0	5	0	0	0	2	19
	C	1	0	4	1	1	3	2	1	0	3	0	5	0	0	1	5	27
	D	4	0	6	1	2	2	3	0	0	3	1	6	0	0	2	4	34
1000	E	5	2	5	2	3	3	5	3	0	2	3	7	2	3	1	7	53
	F	4	2	7	2	5	4	7	2	0	1	4	6	4	2	4	5	59
	G	3	4	6	7	2	3	5	4	0	4	4	7	2	4	3	5	63
	H	5	1	3	4	5	4	7	2	4	1	3	3	4	2	5	4	57
	I	4	5	5	6	4	6	5	4	3	1	6	7	4	4	3	3	70
	J	5	3	5	5	4	3	6	2	5	0	6	6	5	4	6	5	70
	Totals	35	17	45	28	26	28	43	18	12	16	27	52	21	19	25	42	454

[1] LOT A - Eggs Set During Week 12; LOT B - Eggs Set During Week 13; etc.

Appendix IX - Table 1

Eggshell Thickness (mm) per Pen by Week

from a Northern Bobwhite Reproduction Study with H-28548

(Control)

	Weeks												
Pen	A	B	C	D	E	F	G	H	I	J	Mean	SD	[n]
401	-		0.219		0.229		0.225		0.231		0.226	0.005	4
402		0.198		0.213		0.219		0.218		0.224	0.215	0.010	5
403	-		-		-		0.215		0.228		0.222	0.009	2
404		0.212		0.202		0.209		0.214		0.210	0.209	0.004	5
405	-		0.227		0.254		0.238		0.241		0.240	0.011	4
406		0.209		0.213		0.219		0.215		0.210	0.213	0.004	5
407	-		0.230		0.210		0.241		0.234		0.229	0.013	4
408		-		0.212		0.226		0.234		0.222	0.224	0.009	4
409	-		0.239		0.235		0.232		0.238		0.236	0.003	4
410		0.230		0.220		0.240		0.232		0.227	0.230	0.007	5
411	0.209		0.214		0.218		0.218		0.217		0.215	0.004	5
412		0.220		0.215		0.219		0.218		0.218	0.218	0.002	5
413	-		-		-		-		-				
414		0.226		0.214		0.230		0.231		0.220	0.224	0.007	5
415	-		-		0.235		0.240		0.236		0.237	0.003	3
416		0.237		0.233		0.236		0.242		0.238	0.237	0.003	5
											Mean	SD	
						Mean and standard deviation of pen means:					0.225	0.010	65

- No eggs available.

Appendix IX - Table 2

Eggshell Thickness (mm) per Pen by Week

from a Northern Bobwhite Reproduction Study with H-28548

(100 PPM)

	Weeks												
Pen	A	B	C	D	E	F	G	H	I	J	Mean	SD	[n]
417	0.211		0.236		0.241		0.249		0.238		0.235	0.014	5
418		0.225		0.237		0.240		0.238		0.239	0.236	0.006	5
419	-		0.274		0.260		0.273		0.275		0.270	0.007	4
420		0.220		0.236		0.234		0.235		0.233	0.232	0.007	5
421	-		0.201		0.234		0.241		0.220		0.224	0.017	4
422		0.248		0.248		0.231		0.230		0.220	0.236	0.012	5
423	-		0.218		0.227		0.221		0.214		0.220	0.005	4
424		0.228		0.232		0.228		0.236		0.221	0.229	0.006	5
425	-		0.232		0.238		0.249		0.242		0.240	0.007	4
426		0.248		0.239		0.238		0.238		0.236	0.240	0.005	5
427	-		0.240		0.257		0.258		0.265		0.255	0.011	4
428		0.218		0.213		0.217		0.220		0.217	0.217	0.003	5
429	-		0.216		0.214		0.198		0.220		0.212	0.009	4
430		0.214		0.216		0.218		0.211		0.212	0.214	0.003	5
431	-		0.237		0.238		0.239		0.239		0.238	0.001	4
432		-		0.240		0.247		0.258		0.256	0.250	0.008	4
											Mean	SD	
						Mean and standard deviation of pen means:					0.234	0.016	72

- No eggs available.

Differences between the control and this treatment group were not significant ($p > 0.05$).

Appendix IX - Table 3
Eggshell Thickness (mm) per Pen by Week
from a Northern Bobwhite Reproduction Study with H-28548
(500 PPM)

	Weeks												
Pen	A	B	C	D	E	F	G	H	I	J	Mean	SD	[n]
433	-		0.224		0.236		0.238		0.237		0.234	0.006	4
434		0.239		0.228		0.234		0.228		0.232	0.232	0.005	5
435	0.230		0.232		0.239		0.229		0.234		0.233	0.004	5
436		-		0.188		0.236		0.237		0.235	0.224	0.024	4
437	-		-		0.193		0.212		0.209		0.205	0.010	3
438		0.231		0.231		0.236		0.237		0.236	0.234	0.003	5
439	0.234		0.228		0.238		0.238		0.238		0.235	0.005	5
440		0.252		0.238		0.238		0.238		0.238	0.241	0.006	5
441	-		0.210		0.218		0.211		0.212		0.213	0.004	4
442		-		0.234		0.238		0.231		0.234	0.235	0.003	4
443	-		0.240		0.236		0.238		0.238		0.238	0.002	4
444		-		-		-		0.258		0.257	0.258	0.001	2
445	0.257		0.260		0.258		0.267		0.259		0.260	0.004	5
446		-		0.248		0.238		0.239		0.239	0.241	0.005	4
447	-		0.247		0.258		0.261		0.258		0.256	0.006	4
448		0.258		0.249		0.242		0.252		0.256	0.251	0.006	5
											Mean	SD	
						Mean and standard deviation of pen means:					0.237	0.015	68

- No eggs available.
Differences between the control and this treatment group were not significant ($p > 0.05$).

Appendix IX - Table 4

Eggshell Thickness (mm) per Pen by Week

from a Northern Bobwhite Reproduction Study with H-28548

(1000 PPM)

	Weeks												
Pen	A	B	C	D	E	F	G	H	I	J	Mean	SD	[n]
449	-		0.265		0.258		0.258		0.259		0.260	0.003	4
450		-		0.236		0.235		0.258		0.255	0.246	0.012	4
451	0.213		0.218		0.231		0.222		0.235		0.224	0.009	5
452		-		0.240		0.238		0.239		0.239	0.239	0.001	4
453	-		0.241		0.216		0.219		0.228		0.226	0.011	4
454		0.199		0.219		0.220		0.238		0.237	0.222	0.016	5
455	-		0.226		0.217		0.216		0.221		0.220	0.005	4
456		-		0.215		0.225		0.240		0.248	0.232	0.015	4
457	-		-		0.267		0.268		0.268		0.268	0.001	3
458		0.257		0.256		0.256		0.264		0.258	0.258	0.003	5
459	-		0.198		0.221		0.234		0.236		0.222	0.017	4
460		0.207		0.212		0.212		0.211		0.210	0.210	0.002	5
461	-		-		0.237		0.240		0.242		0.240	0.002	3
462		-		0.239		0.252		0.258		0.260	0.252	0.010	4
463	-		0.220		0.220		0.229		0.226		0.224	0.004	4
464		0.248		0.250		0.248		0.242		0.249	0.248	0.003	5
											Mean	SD	
							Mean and standard deviation of pen means:				0.237	0.017	67

- No eggs available.

Differences between the control and this treatment group were not significant ($p > 0.05$).

Appendix X - Table 1

Mean Hatchling Body Weight (g) per Pen by Week

from a Northern Bobwhite Reproduction Study with H-28548

(Control)

	Weeks [No. of Hatchlings]												
Pen	A[n]	B[n]	C[n]	D[n]	E[n]	F[n]	G[n]	H[n]	I[n]	J[n]	Mean	SD	Total Hatch
401	[0]	6[2]	6[3]	6[5]	6[5]	6[6]	5[6]	6[5]	6[5]	6[7]	6	0	44
402	[0]	[0]	6[2]	6[3]	6[5]	6[4]	6[6]	6[6]	6[6]	6[4]	6	0	36
403	[0]	[0]	[0]	[0]	[0]	[0]	[0]	4[2]	[0]	5[3]	5	1	5
404	[0]	6[1]	7[2]	6[1]	7[4]	6[3]	6[5]	7[3]	7[6]	7[4]	6	0	29
405	[0]	[0]	6[1]	6[5]	6[4]	6[6]	6[6]	6[7]	6[5]	6[7]	6	0	41
406	[0]	[0]	6[2]	7[2]	6[5]	6[4]	7[5]	7[4]	7[6]	7[6]	7	0	34
407	[0]	6[1]	[0]	6[3]	[0]	[0]	5[1]	6[3]	6[3]	7[4]	6	0	15
408	[0]	[0]	[0]	5[1]	6[4]	6[3]	6[5]	6[4]	6[5]	6[4]	6	0	26
409	[0]	6[2]	7[4]	7[6]	6[5]	7[7]	6[6]	7[6]	7[4]	7[7]	7	0	47
410	6[1]	6[4]	6[3]	6[5]	6[6]	7[5]	6[7]	6[5]	6[6]	6[6]	6	0	48
411	6[1]	6[5]	6[4]	7[6]	6[5]	6[7]	6[6]	6[7]	7[6]	7[7]	6	0	54
412	[0]	6[1]	6[5]	7[4]	6[6]	7[5]	6[7]	7[6]	7[6]	7[6]	7	0	46
413	-	-	-	-	-	-	-	-	-	-			
414	[0]	5[2]	6[2]	5[2]	5[4]	6[4]	6[6]	6[5]	5[7]	6[6]	5	0	38
415	[0]	[0]	[0]	5[1]	5[1]	5[3]	6[1]	7[5]	6[3]	7[5]	6	1	19
416	[0]	6[1]	6[5]	6[4]	7[7]	7[6]	6[4]	7[2]	7[7]	7[5]	7	0	41
											Mean	SD	
											6	1	523

The number of hatchlings weighed may differ from the total number of hatchlings since those hatchlings found dead were not weighed.
- Data are not available due to adult mortality.
SD = Standard deviation of mean body weight, by parental pen, by week.

Appendix X - Table 2

Mean Hatchling Body Weight (g) per Pen by Week

from a Northern Bobwhite Reproduction Study with H-28548

(100 PPM)

	Weeks [No. of Hatchlings]												
Pen	A[n]	B[n]	C[n]	D[n]	E[n]	F[n]	G[n]	H[n]	I[n]	J[n]	Mean	SD	Total Hatch
417	6[1]	6[4]	6[3]	6[5]	6[5]	6[6]	6[6]	6[7]	6[6]	6[7]	6	0	50
418	[0]	6[2]	5[3]	6[2]	6[4]	6[3]	6[3]	[0]	5[3]	6[2]	6	0	22
419	[0]	[0]	[0]	[0]	[0]	7[6]	7[2]	7[5]	7[6]	7[7]	7	0	26
420	[0]	6[2]	6[4]	6[3]	6[5]	7[4]	6[7]	6[5]	7[6]	7[6]	6	0	42
421	[0]	[0]	6[1]	6[1]	6[4]	6[5]	5[5]	5[5]	5[5]	6[6]	6	0	32
422	[0]	[0]	[0]	[0]	5[5]	6[5]	6[5]	6[6]	6[5]	6[6]	6	0	32
423	[0]	[0]	[0]	[0]	[0]	6[1]	7[4]	7[6]	6[6]	7[6]	7	0	23
424	[0]	5[3]	6[4]	6[3]	5[3]	6[2]	5[3]	5[3]	6[5]	6[3]	6	0	29
425	[0]	[0]	6[1]	6[3]	6[5]	6[6]	6[3]	6[5]	6[6]	7[5]	6	0	34
426	[0]	[0]	6[4]	6[4]	6[3]	6[2]	6[3]	6[1]	6[4]	6[5]	6	0	26
427	[0]	[0]	[0]	6[1]	6[5]	7[6]	6[6]	6[6]	6[5]	7[6]	6	0	35
428	[0]	[0]	5[3]	5[2]	5[4]	6[4]	5[5]	6[4]	6[5]	5[4]	5	0	31
429	[0]	6[2]	6[3]	6[5]	6[6]	7[7]	6[6]	7[7]	6[5]	7[6]	6	0	47
430	7[9]	6[4]	6[7]	7[5]	6[6]	7[5]	7[7]	7[5]	7[7]	7[6]	7	0	61
431	[0]	[0]	[0]	[0]	6[3]	7[4]	6[3]	7[5]	6[5]	6[5]	7	0	25
432	[0]	[0]	[0]	5[2]	6[3]	6[4]	6[4]	6[3]	7[6]	6[6]	6	0	28
											Mean	SD	
											6	0	543

The number of hatchlings weighed may differ from the total number of hatchlings since those hatchlings found dead were not weighed.
Differences between the control and this treatment group were not significant ($p > 0.05$).
SD = Standard deviation of mean body weight, by parental pen, by week.

Appendix X - Table 3

Mean Hatchling Body Weight (g) per Pen by Week

from a Northern Bobwhite Reproduction Study with H-28548

(500 PPM)

	Weeks [No. of Hatchlings]												
Pen	A[n]	B[n]	C[n]	D[n]	E[n]	F[n]	G[n]	H[n]	I[n]	J[n]	Mean	SD	Total Hatch
433	[0]	6[3]	7[2]	7[4]	7[4]	7[6]	7[4]	7[5]	7[5]	7[6]	7	0	39
434	[0]	5[1]	6[4]	6[4]	6[5]	7[5]	7[6]	7[5]	6[5]	7[4]	6	0	39
435	[0]	6[2]	5[1]	6[3]	7[4]	7[5]	7[5]	6[6]	7[5]	7[5]	6	0	36
436	[0]	[0]	[0]	[0]	6[4]	7[4]	7[6]	7[3]	7[7]	7[5]	7	0	29
437	[0]	[0]	[0]	[0]	[0]	[0]	5[1]	6[2]	[0]	7[4]	6	1	7
438	6[2]	6[5]	6[6]	6[6]	6[6]	6[6]	7[7]	7[5]	6[7]	6[5]	6	0	55
439	[0]	[0]	[0]	[0]	6[5]	7[6]	7[5]	6[6]	7[6]	7[3]	6	0	31
440	[0]	[0]	5[2]	[0]	4[1]	5[2]	5[5]	5[3]	5[6]	6[3]	5	0	22
441	[0]	7[3]	7[2]	6[3]	7[4]	7[6]	7[5]	7[6]	7[6]	7[7]	7	0	42
442	[0]	[0]	7[2]	6[2]	7[5]	6[5]	6[6]	7[6]	6[7]	7[6]	6	0	39
443	[0]	6[2]	5[3]	6[4]	5[5]	6[6]	5[5]	5[3]	6[3]	6[6]	6	0	37
444	[0]	[0]	[0]	[0]	[0]	[0]	[0]	6[3]	6[4]	7[4]	6	1	11
445	[0]	6[4]	6[3]	5[5]	6[5]	6[4]	6[5]	6[4]	6[4]	[0]	6	0	34
446	[0]	[0]	6[1]	6[2]	6[1]	7[4]	7[5]	6[5]	7[7]	6[6]	6	0	31
447	[0]	[0]	[0]	5[2]	5[3]	5[7]	6[2]	6[4]	6[3]	6[4]	5	0	25
448	[0]	6[1]	7[3]	7[3]	7[4]	7[3]	7[5]	7[4]	7[5]	7[4]	7	0	32
											Mean	SD	
											6	1	509

The number of hatchlings weighed may differ from the total number of hatchlings since those hatchlings found dead were not weighed.
Differences between the control and this treatment group were not significant ($p > 0.05$).
SD = Standard deviation of mean body weight, by parental pen, by week.

Appendix X - Table 4

Mean Hatchling Body Weight (g) per Pen by Week

from a Northern Bobwhite Reproduction Study with H-28548

(1000 PPM)

	Weeks [No. of Hatchlings]												
Pen	A[n]	B[n]	C[n]	D[n]	E[n]	F[n]	G[n]	H[n]	I[n]	J[n]	Mean	SD	Total Hatch
449	[0]	6[4]	6[1]	7[4]	7[5]	6[6]	7[3]	7[5]	7[4]	7[5]	7	0	37
450	[0]	[0]	[0]	[0]	7[2]	7[2]	7[4]	7[1]	7[5]	7[3]	7	0	17
451	[0]	6[4]	6[4]	6[6]	6[6]	6[7]	7[6]	7[5]	6[6]	6[5]	6	0	49
452	[0]	[0]	5[1]	5[1]	6[2]	6[3]	6[7]	6[4]	6[6]	7[5]	6	0	29
453	[0]	[0]	6[1]	6[3]	6[3]	6[5]	7[3]	6[5]	6[5]	7[6]	6	0	31
454	[0]	[0]	6[3]	7[2]	6[3]	6[4]	6[3]	6[4]	6[6]	6[4]	6	0	29
455	[0]	5[3]	6[2]	6[3]	6[5]	6[7]	6[6]	6[7]	6[5]	6[6]	6	0	44
456	[0]	[0]	6[1]	[0]	7[3]	7[2]	7[4]	6[2]	7[5]	7[3]	7	0	20
457	[0]	[0]	[0]	[0]	[0]	[0]	[0]	6[4]	6[4]	6[5]	6	0	13
458	[0]	6[1]	6[4]	5[3]	6[5]	6[1]	6[4]	6[1]	6[1]	5[1]	6	0	21
459	[0]	[0]	[0]	6[1]	5[3]	6[4]	6[4]	6[3]	6[6]	6[7]	6	0	28
460	[0]	6[5]	6[5]	6[6]	6[7]	7[6]	7[7]	7[3]	6[7]	7[6]	6	0	52
461	[0]	[0]	[0]	[0]	6[2]	6[4]	6[2]	6[4]	6[4]	6[5]	6	0	21
462	[0]	[0]	[0]	[0]	6[3]	6[2]	6[4]	6[3]	6[5]	6[4]	6	0	21
463	[0]	[0]	5[1]	6[2]	6[1]	6[4]	6[3]	6[5]	6[3]	6[6]	6	0	25
464	5[2]	6[2]	5[5]	6[4]	6[7]	6[5]	6[5]	6[4]	6[3]	6[5]	6	0	42
											Mean	SD	
											6	0	479

The number of hatchlings weighed may differ from the total number of hatchlings since those hatchlings found dead were not weighed.
Differences between the control and this treatment group were not significant ($p > 0.05$).
SD = Standard deviation of mean body weight, by parental pen, by week.

Appendix XI - Table 1

Mean 14-Day Old Survivors Body Weight (g) per Pen by Week

from a Northern Bobwhite Reproduction Study with H-28548

(Control)

	Weeks [No. of 14-Day Old Survivors]												
Pen	A[n]	B[n]	C[n]	D[n]	E[n]	F[n]	G[n]	H[n]	I[n]	J[n]	Mean	SD	14-Day Total
401	[0]	24[2]	30[3]	28[5]	23[5]	27[6]	28[6]	32[5]	29[5]	29[7]	28	2	44
402	[0]	[0]	25[2]	30[3]	29[5]	28[4]	28[6]	27[6]	29[6]	25[4]	28	2	36
403	[0]	[0]	[0]	[0]	[0]	[0]	[0]	13[1]	[0]	23[3]	21	5	4
404	[0]	37[1]	32[2]	27[1]	30[4]	26[2]	26[4]	31[3]	35[6]	34[4]	31	3	27
405	[0]	[0]	25[1]	24[5]	19[4]	24[6]	20[5]	21[7]	24[5]	17[3]	22	2	36
406	[0]	[0]	25[1]	30[2]	24[5]	26[4]	25[5]	32[4]	26[6]	30[6]	27	3	33
407	[0]	20[1]	[0]	29[2]	[0]	[0]	21[1]	25[3]	27[3]	28[3]	26	3	13
408	[0]	[0]	[0]	16[1]	18[2]	24[3]	27[5]	24[3]	26[5]	22[3]	24	3	22
409	[0]	30[2]	24[4]	28[6]	24[5]	27[7]	24[6]	29[6]	32[4]	29[7]	27	2	47
410	31[1]	29[4]	25[3]	25[5]	28[6]	27[5]	28[6]	31[5]	31[6]	27[5]	28	2	46
411	22[1]	29[5]	27[4]	27[5]	23[3]	27[7]	26[6]	31[6]	28[6]	31[4]	28	2	47
412	[0]	31[1]	27[5]	28[4]	26[4]	23[4]	25[7]	26[6]	25[6]	28[6]	26	2	43
413	-	-	-	-	-	-	-	-	-	-			
414	[0]	30[1]	32[2]	28[1]	24[4]	28[4]	29[6]	31[5]	31[7]	32[6]	30	2	36
415	[0]	[0]	[0]	19[1]	23[1]	24[2]	24[1]	28[5]	28[3]	30[5]	27	3	18
416	[0]	21[1]	22[4]	28[4]	26[4]	22[6]	23[4]	27[2]	26[7]	27[5]	25	2	37
											Mean	SD	
											26	3	489

- Data are not available due to adult mortality.

SD = Standard deviation of mean body weight, by parental pen, by week.

Appendix XI - Table 2

Mean 14-Day Old Survivors Body Weight (g) per Pen by Week from a Northern Bobwhite Reproduction Study with H-28548 (100 PPM)

	Weeks [No. of 14-Day Old Survivors]												14-Day
Pen	A[n]	B[n]	C[n]	D[n]	E[n]	F[n]	G[n]	H[n]	I[n]	J[n]	Mean	SD	Total
417	28[1]	33[4]	30[3]	27[4]	24[4]	26[6]	26[6]	26[7]	28[5]	28[7]	27	2	47
418	[0]	28[2]	23[2]	25[2]	22[4]	28[3]	25[1]	[0]	25[3]	27[2]	25	2	19
419	[0]	[0]	[0]	[0]	[0]	27[6]	29[2]	32[5]	31[6]	29[7]	30	2	26
420	[0]	34[2]	31[4]	30[3]	31[5]	30[4]	30[6]	31[5]	30[5]	32[6]	31	1	40
421	[0]	[0]	27[1]	23[1]	22[4]	26[5]	22[3]	18[3]	26[2]	28[5]	24	3	24
422	[0]	[0]	[0]	[0]	29[5]	30[5]	29[5]	30[6]	32[5]	31[6]	30	1	32
423	[0]	[0]	[0]	[0]	[0]	28[1]	24[4]	24[6]	23[6]	25[6]	24	1	23
424	[0]	23[3]	23[4]	26[3]	19[3]	17[2]	29[1]	22[3]	26[4]	28[2]	23	3	25
425	[0]	[0]	30[1]	29[3]	29[5]	27[6]	30[3]	28[5]	32[6]	30[5]	29	2	34
426	[0]	[0]	24[4]	25[4]	27[3]	20[2]	27[3]	27[1]	23[4]	26[5]	25	2	26
427	[0]	[0]	[0]	[0]	28[4]	27[6]	29[6]	29[6]	27[5]	30[6]	28	1	33
428	[0]	[0]	23[3]	22[2]	23[4]	26[4]	19[2]	24[4]	27[5]	31[4]	25	3	28
429	[0]	22[2]	23[3]	21[4]	25[6]	25[7]	18[6]	25[7]	23[3]	29[6]	24	3	44
430	27[9]	28[4]	26[7]	26[5]	26[5]	24[5]	24[6]	23[2]	27[6]	28[6]	26	1	55
431	[0]	[0]	[0]	[0]	27[3]	24[4]	29[3]	28[4]	24[5]	25[5]	26	2	24
432	[0]	[0]	[0]	25[2]	27[3]	25[3]	28[2]	27[3]	30[6]	30[6]	28	2	25
											Mean	SD	
											27	2	505

Differences between the control and this treatment group were not significant ($p > 0.05$).
SD = Standard deviation of mean body weight, by parental pen, by week.

Appendix XI - Table 3

Mean 14-Day Old Survivors Body Weight (g) per Pen by Week

from a Northern Bobwhite Reproduction Study with H-28548

(500 PPM)

	Weeks [No. of 14-Day Old Survivors]												
Pen	A[n]	B[n]	C[n]	D[n]	E[n]	F[n]	G[n]	H[n]	I[n]	J[n]	Mean	SD	14-Day Total
433	[0]	27[3]	30[2]	28[4]	26[4]	26[6]	29[4]	28[5]	25[4]	28[6]	27	1	38
434	[0]	26[1]	30[4]	28[4]	26[5]	28[5]	32[5]	26[5]	29[5]	34[4]	29	3	38
435	[0]	22[2]	25[1]	24[3]	22[4]	21[5]	25[4]	25[5]	31[5]	30[5]	25	4	34
436	[0]	[0]	[0]	[0]	24[3]	21[4]	23[6]	18[3]	26[7]	27[5]	24	3	28
437	[0]	[0]	[0]	[0]	[0]	[0]	[0]	30[2]	[0]	30[4]	30	0	6
438	33[2]	26[5]	28[6]	31[6]	26[6]	27[5]	26[6]	26[5]	31[6]	26[5]	28	2	52
439	[0]	[0]	[0]	[0]	25[4]	23[6]	23[5]	23[6]	29[6]	33[3]	25	3	30
440	[0]	[0]	24[1]	[0]	[0]	22[2]	24[5]	18[3]	30[5]	28[3]	25	4	19
441	[0]	32[3]	29[2]	31[3]	26[4]	24[6]	28[5]	27[6]	28[5]	29[7]	28	2	41
442	[0]	[0]	30[2]	34[2]	29[5]	27[5]	32[5]	26[6]	32[6]	33[5]	30	3	36
443	[0]	30[1]	24[3]	27[4]	26[5]	24[5]	26[4]	11[1]	28[3]	32[6]	26	4	32
444	[0]	[0]	[0]	[0]	[0]	[0]	[0]	26[3]	33[4]	32[4]	31	3	11
445	[0]	29[4]	29[3]	23[5]	26[5]	23[4]	26[5]	23[4]	29[4]	[0]	26	3	34
446	[0]	[0]	24[1]	32[2]	22[1]	26[3]	23[4]	24[5]	25[7]	22[5]	24	2	28
447	[0]	[0]	[0]	26[2]	26[3]	25[6]	23[2]	29[4]	27[3]	29[4]	26	2	24
448	[0]	[0]	29[3]	31[2]	34[4]	30[3]	33[5]	31[4]	31[4]	35[4]	32	2	29
											Mean	SD	
											27	2	480

Differences between the control and this treatment group were not significant ($p > 0.05$).
SD = Standard deviation of mean body weight, by parental pen, by week.

Appendix XI - Table 4

Mean 14-Day Old Survivors Body Weight (g) per Pen by Week

from a Northern Bobwhite Reproduction Study with H-28548

(1000 PPM)

	Weeks [No. of 14-Day Old Survivors]												
Pen	A[n]	B[n]	C[n]	D[n]	E[n]	F[n]	G[n]	H[n]	I[n]	J[n]	Mean	SD	14-Day Total
449	[0]	29[4]	19[1]	22[4]	21[5]	25[4]	25[3]	25[5]	22[4]	30[5]	25	3	35
450	[0]	[0]	[0]	[0]	25[2]	26[2]	25[4]	34[1]	29[5]	33[3]	28	3	17
451	[0]	28[4]	21[4]	21[6]	21[5]	22[7]	23[6]	20[3]	24[5]	27[5]	23	2	45
452	[0]	[0]	24[1]	27[1]	25[2]	24[2]	29[7]	29[4]	26[6]	36[5]	29	4	28
453	[0]	[0]	25[1]	26[2]	26[3]	27[5]	29[2]	27[5]	26[4]	31[4]	27	2	26
454	[0]	[0]	26[3]	25[2]	26[3]	25[4]	27[3]	27[4]	25[6]	30[3]	26	2	28
455	[0]	30[3]	19[2]	27[3]	26[5]	25[7]	29[5]	28[7]	28[5]	29[6]	27	2	43
456	[0]	[0]	27[1]	[0]	28[3]	18[2]	27[4]	33[2]	33[4]	34[2]	29	5	18
457	[0]	[0]	[0]	[0]	[0]	[0]	[0]	26[4]	28[3]	32[5]	29	3	12
458	[0]	28[1]	27[3]	24[3]	25[2]	25[1]	31[4]	28[1]	23[1]	[0]	27	3	16
459	[0]	[0]	[0]	22[1]	20[3]	18[4]	21[4]	23[3]	26[6]	23[6]	22	3	27
460	[0]	34[5]	32[5]	28[6]	29[7]	29[6]	32[7]	33[3]	28[7]	33[6]	31	2	52
461	[0]	[0]	[0]	[0]	22[2]	25[4]	23[2]	27[4]	27[4]	30[5]	26	3	21
462	[0]	[0]	[0]	[0]	24[3]	20[2]	25[4]	22[2]	24[4]	29[4]	25	3	19
463	[0]	[0]	26[1]	26[2]	29[1]	22[4]	26[3]	29[5]	26[3]	30[6]	27	3	25
464	27[2]	28[2]	27[5]	28[4]	26[7]	26[5]	29[5]	26[4]	27[3]	32[5]	28	2	42
											Mean	SD	
											27	2	454

Differences between the control and this treatment group were not significant ($p > 0.05$).
SD = Standard deviation of mean body weight, by parental pen, by week.

Appendix XII - Table 1
Individual Gross Pathological Observations
from a Northern Bobwhite Reproduction Study with H-28548

Birds Euthanized at Test Termination
0 ppm - Control

Males	Pens															
	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416
External - feather loss	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	X
External - foot and ankle lesions	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
Liver - slightly pale and/or slightly mottled	-	-	-	-	-	X	-	-	-	-	-	-	-	X	-	-
Liver - pale and mottled	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Reproductive - right testis small, ~ 1.5 cm	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Reproductive - right testis small, ~ 1.25 cm	X	-	-	-	-	-	-	-	X	-	-	-	-	X	-	X
Reproductive - right testis small, ~ 1.0 cm	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-
Reproductive - left testis small, ~ 1.5 cm	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-
Not remarkable	-	-	X	X	-	-	X	X	-	-	X	-	-	-	X	-

Females	Pens															
	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416
External - feather loss	X	X	X	X	X	X	X	X	X	X	-	-	-	-	X	X
External - small head lesions	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-
External - extensive head lesion	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
External - back and shoulder lesions	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
Musculoskeletal - some loss of muscle mass	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
Reproductive - ovary regressed	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
Not remarkable	-	-	-	-	-	-	-	-	-	-	X	X	-	X	-	-

Appendix XII - Table 2
Individual Gross Pathological Observations
from a Northern Bobwhite Reproduction Study with H-28548

Birds Euthanized at Test Termination
100 ppm

Males	Pens															
	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432
External - feather loss	-	X	-	-	-	-	X	-	X	-	X	-	-	-	-	-
External - foot and ankle lesions	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Liver - slightly pale	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-
Reproductive - right testis small, ~ 1.25 cm	X	-	X	-	-	-	-	-	-	-	-	-	-	-	-	X
Not remarkable	-	-	-	X	X	X	-	X	-	X	-	X	X	-	X	-

Females	Pens															
	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432
External - feather loss	-	-	X	-	X	X	X	-	X	X	X	X	-	X	X	X
External - head lesion	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-
External - bump on head with caseous necrosis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-
External - foot lesion	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-
Not remarkable	X	X	-	X	-	-	-	X	-	-	-	-	X	-	-	-

Appendix XII - Table 3
Individual Gross Pathological Observations
from a Northern Bobwhite Reproduction Study with H-28548

Birds Euthanized at Test Termination
500 ppm

Males	Pens															
	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448
External - feather loss	-	-	-	-	-	-	-	-	-	-	X	X	-	-	-	-
External - foot lesions	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-
External - digit missing	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-
Reproductive - right testis small, ~ 1.25 cm	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	X
Reproductive - right testis small, ~ 1.0 cm	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
Reproductive - left testis small, ~ 1.5 cm	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-
Not remarkable	X	X	-	X	X	X	X	-	X	X	-	-	X	X	-	-

Females	Pens															
	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448
External - feather loss	X	-	-	X	X	-	-	X	-	X	X	X	-	X	-	X
External - small lesion near left eye	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-
External - foot and/or hock lesions/swelling	-	-	-	-	-	-	X	-	-	-	-	-	X	-	X	-
External - digit missing	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-
Abdominal cavity - slight egg yolk peritonitis	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-
Reproductive - ovary regressing	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-
Reproductive - ovary regressed	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
Not remarkable	-	X	X	-	-	X	-	-	X	-	-	-	-	-	-	-

Appendix XII - Table 4
Individual Gross Pathological Observations
from a Northern Bobwhite Reproduction Study with H-28548

Birds Euthanized at Test Termination
1000 ppm

Males	Pens															
	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464
External - feather loss	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	X
Liver - pale area on right lobe (~ 0.5 x 0.1 cm)	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Reproductive - right testis small, ~ 1.25 cm	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	X
Reproductive - left testis small, ~ 1.5 cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
Not remarkable	X	X	X	-	X	X	X	X	X	-	X	X	-	X	X	-

Females	Pens															
	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464
External - feather loss	X	-	X	-	X	-	-	X	X	X	-	-	X	X	X	-
External - foot lesion	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
External - missing digit	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
Not remarkable	-	X	-	X	-	X	X	-	-	-	X	X	-	-	-	X

Appendix XIII. Certificate of Analysis

E. I. du Pont de Nemours and Company
Wilmington, DE 19898
USA

CERTIFICATE OF ANALYSIS

This Certificate of Analysis fulfills the requirement for characterization of a test substance prior to a study subject to GLP regulations. It documents the identity and content of the test substance. This work was conducted under EPA Good Laboratory Practice Standards (40 CFR 792).

Haskell Code Number	H-28548
Common Name	HFPO Dimer Acid Ammonium Salt
Purity Percent	84%
Other Components	Water – 12.7% Perfluorooctanoic acid – 150 ppm
Date of Analysis	June 13, 2008
Expiration Date	June 13, 2011
Instructions for storage	NRT&H
Reference	DuPont-25455
Analysis performed at	E. I. DuPont de Nemours and Company DuPont Haskell Laboratories Newark, Delaware USA

Approver:

Peter A. Bloxham, Ph.D.
Senior Research Chemist

24-JUN-2009
Date

Revision #1: Revised COA expiration date based on compound stability assessment. 6/23/09

Appendix XIV. The Analysis of H-28548 in Avian Diet

Appendix XIV, Table 1
Typical HPLC Operating Conditions

INSTRUMENT:	Agilent Series 1100 High Performance Liquid Chromatograph with a Perkin-Elmer SCIEX API 100 Mass Spectrometer equipped with a Perkin-Elmer SCIEX TurboIonSpray ion source
ANALYTICAL COLUMN:	Thermo, Betasil C-18 column (50 mm × 2.1 mm I.D., 5-μm particle size)
GUARD COLUMN:	Thermo, Betasil C-18 column (20 mm × 2.1 mm I.D.)
OVEN TEMPERATURE:	40°C
STOP TIME:	6.00 minutes
FLOW RATE:	250 μL/minute
MOBILE PHASE:	Channel A: 15% 0.1% Formic Acid Channel B: 85% Methanol
INJECTION VOLUME:	10 μL
H-28548 RETENTION TIME:	Approximately 2.3 minutes
H-28548 MONITORED MASS:	329 amu
LC/MS PARAMETERS:	NEB: 8.00 CUR: 8.00 IS: -4200 TEM: 400 EP:-4.50 DP: -1.00 FP: -110

Appendix XIV, Table 2
Examples of Equations Used in Calculations

The concentration of H-28548 found at the instrument was determined using the following equation:

$$\text{H-28548 concentration found at the instrument } (\mu g/mL) = \frac{\text{Peak area response} - (\text{y-intercept})}{\text{Slope}}$$

Determination of Sample Residues (H-28548)

The concentration expressed as ppm for each sample was determined using the following equation:

$$\text{H-28548 found in sample (ppm)} = \frac{\text{H-28548 found at the instrument } (\mu g/mL) \times \text{Final volume (mL)} \times \text{Dilution factor}}{\text{Blank diet weight (g)}}$$

The method limit of quantitation (LOQ) is based upon product of the lowest analytical standard and the dilution factor of the matrix blank extract.

$$\text{LOQ} = \frac{\text{Concentration of lowest standard } (\mu g/mL) \times \text{final volume (mL)} \times \text{final dilution}}{\text{Blank diet weight (g)}}$$

Fortification Recoveries

The ppm found in each sample is divided by the nominal concentration of each sample (fortified level, ppm). This ratio times 100 is the percent recovery of the method at that level of fortification.

$$\text{\% Recovery} = \frac{\text{ppm found for each sample}}{\text{ppm fortified for each sample}} \times 100$$

Appendix XIV, Table 3
Matrix Blanks and Fortifications Analyzed Concurrently with the Samples

Sample			Concentration of H-28548 (ppm)			
Number (112-652-)	Type	Interval	Fortified	Measured[1]	Percent Recovery	Mean Percent Recovery
MAB-1	Matrix Blank	Week 1, Day 0	0	< LOD	-	
MAS-1	Matrix Fortification	Week 1, Day 0	25	21.3	85	94
MAS-2	Matrix Fortification	Week 1, Day 0	500	491	98	
MAS-3	Matrix Fortification	Week 1, Day 0	1200	1190	99	
MAB-2	Matrix Blank	Week 1, Day 7 Week 2, Day 0	0	< LOD	-	
MAS-4	Matrix Fortification	Week 1, Day 7 Week 2, Day 0	25	25.8	103	105
MAS-5	Matrix Fortification	Week 1, Day 7 Week 2, Day 0	500	567	113	
MAS-6	Matrix Fortification	Week 1, Day 7 Week 2, Day 0	1200	1190	100	
MAB-3	Matrix Blank	Week 3, Day 0	0	< LOD	-	100
MAS-7	Matrix Fortification	Week 3, Day 0	25	24.6	98	
MAS-8	Matrix Fortification	Week 3, Day 0	500	515	103	
MAS-9	Matrix Fortification	Week 3, Day 0	1200	1200	100	
MAB-4	Matrix Blank	Week 4, Day 0	0	< LOD	-	
MAS-10	Matrix Fortification	Week 4, Day 0	25	26.1	104	100
MAS-11	Matrix Fortification	Week 4, Day 0	500	505	101	
MAS-12	Matrix Fortification	Week 4, Day 0	1200	1160	96	

[1]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyses 0.0100 µg/mL

Appendix XIV, Table 3 (continued)
Matrix Blanks and Fortifications Analyzed Concurrently with the Samples

Sample			Concentration of H-28548 (ppm)			
Number (112-652-)	Type	Interval	Fortified	Measured[1]	Percent Recovery	Mean Percent Recovery
MAB-5	Matrix Blank	Week 8, Day 0	0	< LOD	-	113
MAS-13	Matrix Fortification	Week 8, Day 0	25	29.6	119	
MAS-14	Matrix Fortification	Week 8, Day 0	500	617	123	
MAS-15	Matrix Fortification	Week 8, Day 0	1200	1170	98	
MAB-6	Matrix Blank	Week 12, Day 0	0	< LOD	-	
MAS-16	Matrix Fortification	Week 12, Day 0	25	33.9	136	114
MAS-17	Matrix Fortification	Week 12, Day 0	500	539	108	
MAS-18	Matrix Fortification	Week 12, Day 0	1200	1190	99	
MAB-8	Matrix Blank	Week 16, Day 0	0	< LOD	-	
MAS-22	Matrix Fortification	Week 16, Day 0	25	25.1	100	102
MAS-23	Matrix Fortification	Week 16, Day 0	500	515	103	
MAS-24	Matrix Fortification	Week 16, Day 0	1200	1220	102	
MAB-9	Matrix Blank	Week 20, Day 0	0	< LOD		
MAS-25	Matrix Fortification	Week 20, Day 0	25	22.5	90	93
MAS-26	Matrix Fortification	Week 20, Day 0	500	492	98	
MAS-27	Matrix Fortification	Week 20, Day 0	1200	1080	90	

[1]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyses 0.0100 µg/mL

Appendix XIV, Table 4
Homogeneity H-28548 in Avian Diet

Nominal Concentration (ppm)	Sample I.D. Number (112-652-)	Location Sampled In Mixing Vessel	H-28548 Concentration Measured[1] (ppm)	Mean Measured Standard Deviation (SD) Coefficient of Variation (CV)	Mean Percent of Nominal
100	2	Top Left	97.3		
	3	Top Right	87.1[2]		
	4	Middle Left	105	$\bar{x}$ =91.1	91
	5	Middle Right	89.3	SD =8.43	
	6	Bottom Left	82.6	CV =9.26%	
	7	Bottom Right	85.4		
500	8	Top Left	447		
	9	Top Right	519		
	10	Middle Left	438	$\bar{x}$ =487	97
	11	Middle Right	477	SD =55.0	
	12	Bottom Left	459	CV =11.3%	
	13	Bottom Right	583		
1000	14	Top Left	871		
	15	Top Right	878		
	16	Middle Left	1100	$\bar{x}$ =944	94
	17	Middle Right	955	SD =85.1	
	18	Bottom Left	958	CV = 9.01%	
	19	Bottom Right	901[2]		

[1]Measured values were not corrected for mean procedural recoveries based on sample sets (see Table 3).
[2]The mean of two analysis reported (94.2, 80.0) and (943, 859).

Appendix XIV, Table 5
Verification of H-28548 Concentrations in Avian Diet

Nominal Concentration (ppm)	Sample I.D. Number (112-652-)	Interval Day 0, Week	H-28548 Concentration Measured[1,2] (ppm)	Mean Measured (ppm)	Percent of Nominal	Mean Percent of Nominal
0	1	1	< LOD			
	27	2	< LOD			
	34	3	< LOD			
	41	4	< LOD			
	48	8	< LOD			
	55	12	< LOD			
	62	16	< LOD			
	69	20	< LOD			
100	28	2	87.9		88	91
	29	2	98.1		98	
	35	3	102		102	
	36	3	99.2		99	
	42	4	104		104	
	43	4	87.0	$\bar{X}$ =90.8	87	
	49	8	80.9	SD =9.20	81	
	50	8	87.7	CV =10.1%	88	
	56	12	78.5		79	
	57	12	89.8		90	
	63	16	103		103	
	64	16	83.9		84	
	70	20	76.8		77	
	71	20	92.2		92	

[1]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyses 0.01 µg/mL
[2]Measured values were not corrected for mean procedural recoveries based on sample sets (see Table 3).

Appendix XIV, Table 5 (continued)
Verification of H-28548 Concentrations in Avian Diet

Nominal Concentration (ppm)	Sample I.D. Number (112-652-)	Interval Day 0, Week	H-28548 Concentration Measured[1,2] (ppm)	Mean Measured (ppm)	Percent of Nominal	Mean Percent of Nominal
500	30	2	477		96	95
	31	2	449		90	
	37	3	444		89	
	38	3	447		89	
	44	4	403		81	
	45	4	421	$\bar{X}$ =476	84	
	51	8	503	SD =72.6	101	
	52	8	400	CV =15.3%	80	
	58	12	586		117	
	59	12	633		127	
	65	16	576		115	
	66	16	425		85	
	72	20	455		91	
	73	20	440		88	

[1]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyses 0.01µg/mL
[2]Measured values were not corrected for mean procedural recoveries based on sample sets (see Table 3).

Appendix XIV, Table 5 (continued)
Verification of H-28548 Concentrations in Avian Diet

Nominal Concentration (ppm)	Sample I.D. Number (112-652-)	Interval Day 0, Week	H-28548 Concentration Measured[1,2] (ppm)	Mean Measured (ppm)	Percent of Nominal	Mean Percent of Nominal
1000	32	2	1010		101	95
	33	2	1040		104	
	39	3	876		88	
	40	3	1010		101	
	46	4	801		80	
	47	4	859	$\bar{X}$ =950	86	
	53	8	883	SD =127	88	
	54	8	846	CV =13.4%	85	
	60	12	1100		110	
	61	12	1270		127	
	67	16	815		82	
	68	16	927		93	
	74	20	940		94	
	75	20	928		93	

[1]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyses 0.01 µg/mL
[2]Measured values were not corrected for mean procedural recoveries based on sample sets (see Table 3).

Appendix XIV, Table 6
Ambient Stability of H-28548 in Avian Diet During a Reproduction Study with the Northern Bobwhite Quail

	H-28548 Concentration						
	Week 1, Day 0[1]			Week 1, Day 7			
Nominal Concentration (ppm)	Sample Number (112-652-)	Mean Measured[2,3] (ppm)	Mean Percent of Nominal	Sample Number (112-652-)	Measured[2,3] (ppm)	Mean Measured (ppm)	Mean Percent of Day 0
0	1	< LOD	-	20	< LOD		
100	2-7	91.1	91	21	93.1	99.1	109
				22	105		
500	8-13	487	97	23	536	556	114
				24	575		
1000	14-19	944	94	25	1000	980	104
				26	960		

[1]Day 0 values are from homogeneity samples presented in Table 4 and verification samples presented in Table 5.
[2]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyses 0.01 µg/mL
[3]Measured values were not corrected for mean procedural recoveries based on sample sets (see Table 3).

Appendix XIV, Figure 1
Analytical Method Outline for the Analysis of H-28548 in Avian Diet

Matrix Fortification

A known amount of test substance was weighed into a beaker to prepare the high-level matrix fortification. Approximately 100 g of corn oil fortified basal ration (minus the weight of the test substance) was weighed and half was added to a 600 mL beaker. The beaker containing the test substance was rinsed with the remaining basal ration transferring all rinsates to the 600 mL beaker. The sample was mixed well and transferred to a blender. The sample was then mixed in the blender for ~3 minutes. The blender was stopped at 1-minute intervals to scrape down the sides. The mid-level matrix fortification was prepared in a similar manner using a known amount of the high-level matrix and corn oil fortified basal ration. The low-level matrix fortification was prepared in a similar manner using a known amount of the mid-level matrix and corn oil fortified basal ration.

Extraction

1. Weigh 5.00 grams of avian feed into 8oz. French square bottles (or equivalent).

2. Add 100 mL of methanol (90:10) using a graduated cylinder (or equivalent) to each sample. Then place on a tabletop shaker and shake at ~250 rpm for ~60 minutes.

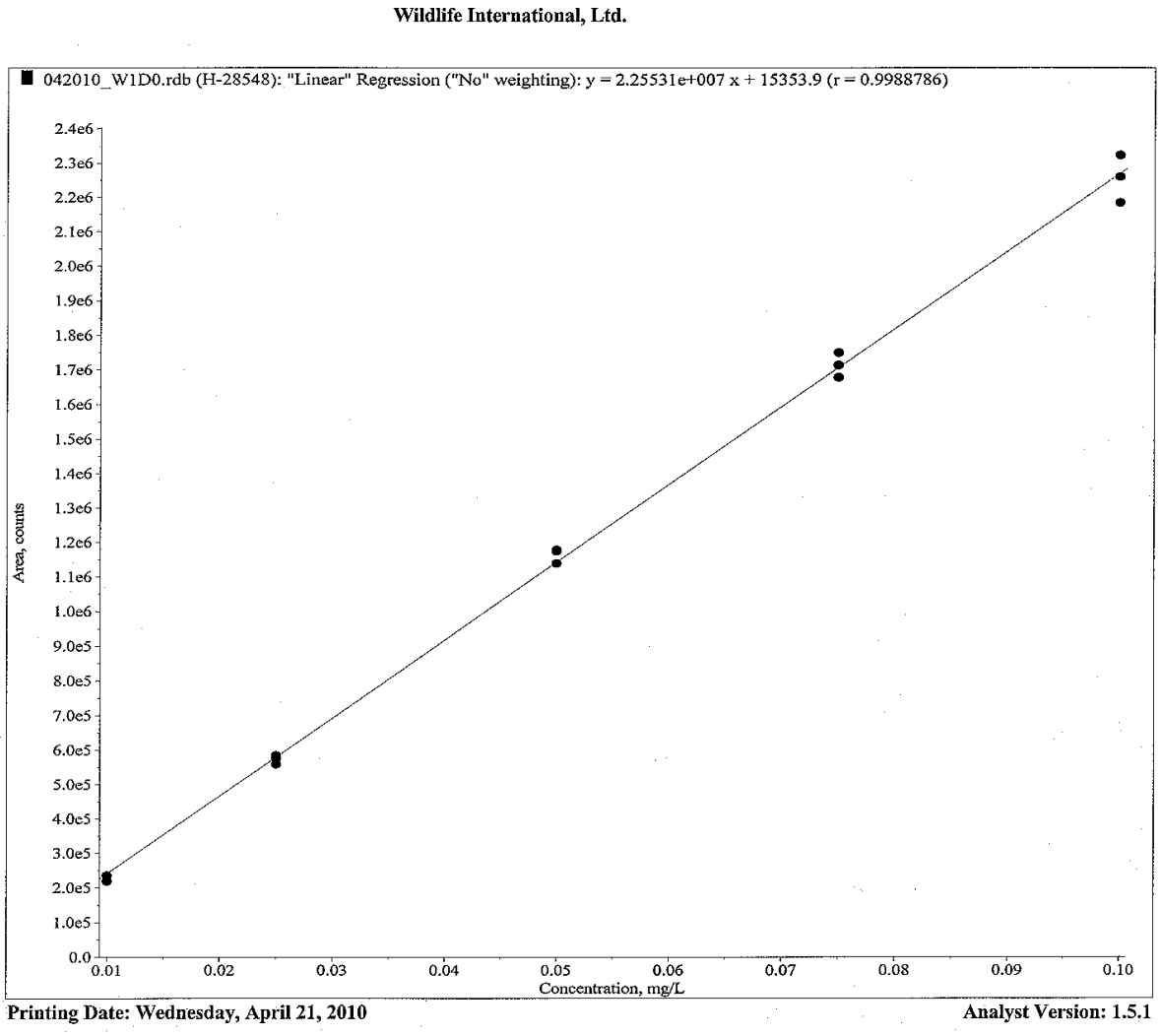
3. Transfer an aliquot to a scintillation vial (~20 mL), and then centrifuge at ~1500 rpm for ~10 minutes.

4. Dilute sample with methanol:0.1% formic acid (50:50) using class A volumetric flask and pipettes, or gas tight syringes.

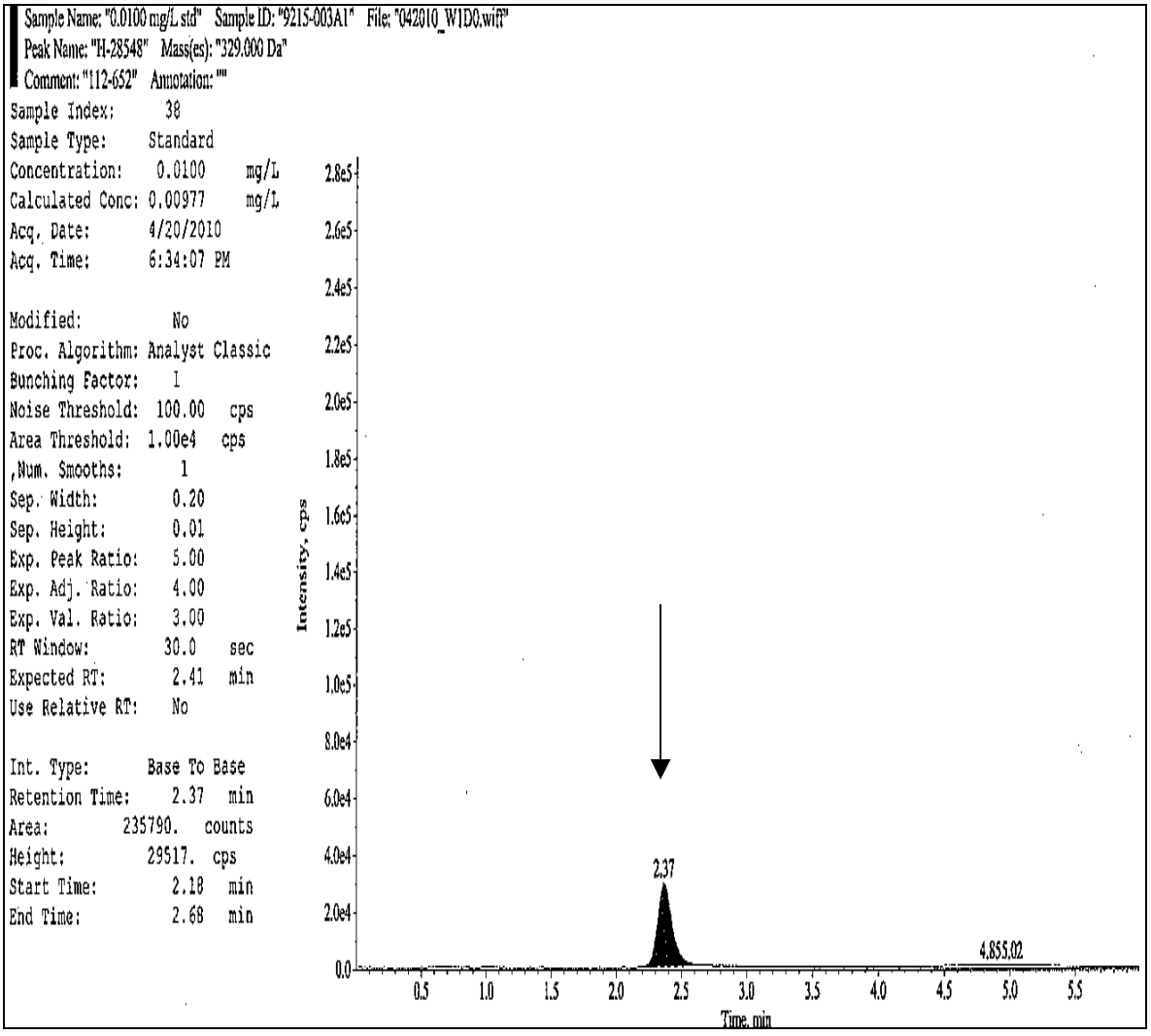
   Samples with concentrations of 0 to 25 ppm , dilute 1.00 mL to 25.0 mL.
   Samples with concentrations of 100 ppm , dilute 0.100 mL to 10.0 mL.
   Samples with concentrations of 500 ppm , dilute 0.100 mL to 50.0 mL.
   Samples with concentrations of 1000 to 1200 ppm, dilute 0.100 mL to 100 mL.

5. Submit samples for analysis by HPLC with Mass Selective Detection.

Appendix XIV, Figure 2
Typical Calibration Curve for H-28548

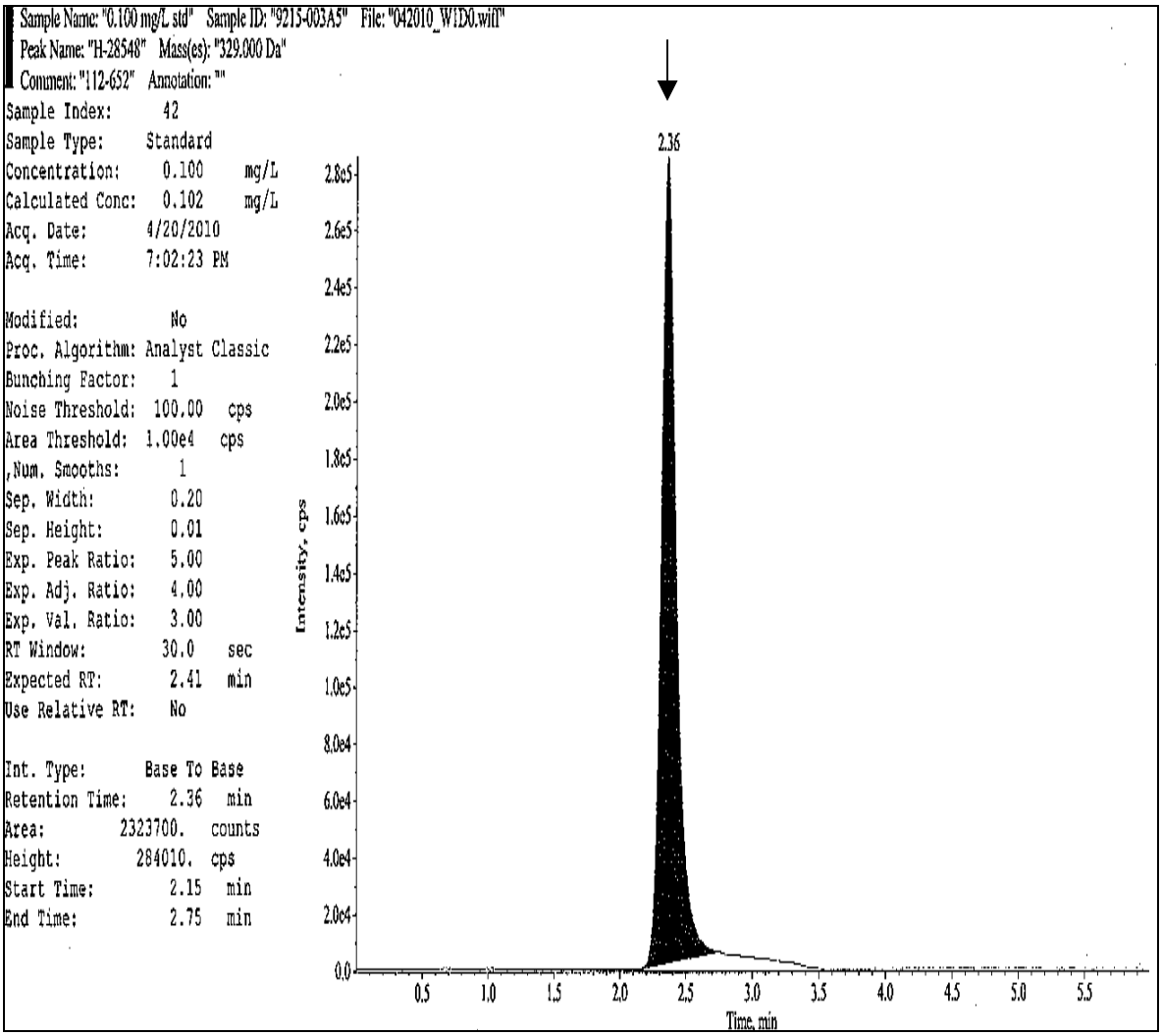


Appendix XIV, Figure 3
Typical Chromatogram of a Low-level H-28548 Calibration Standard



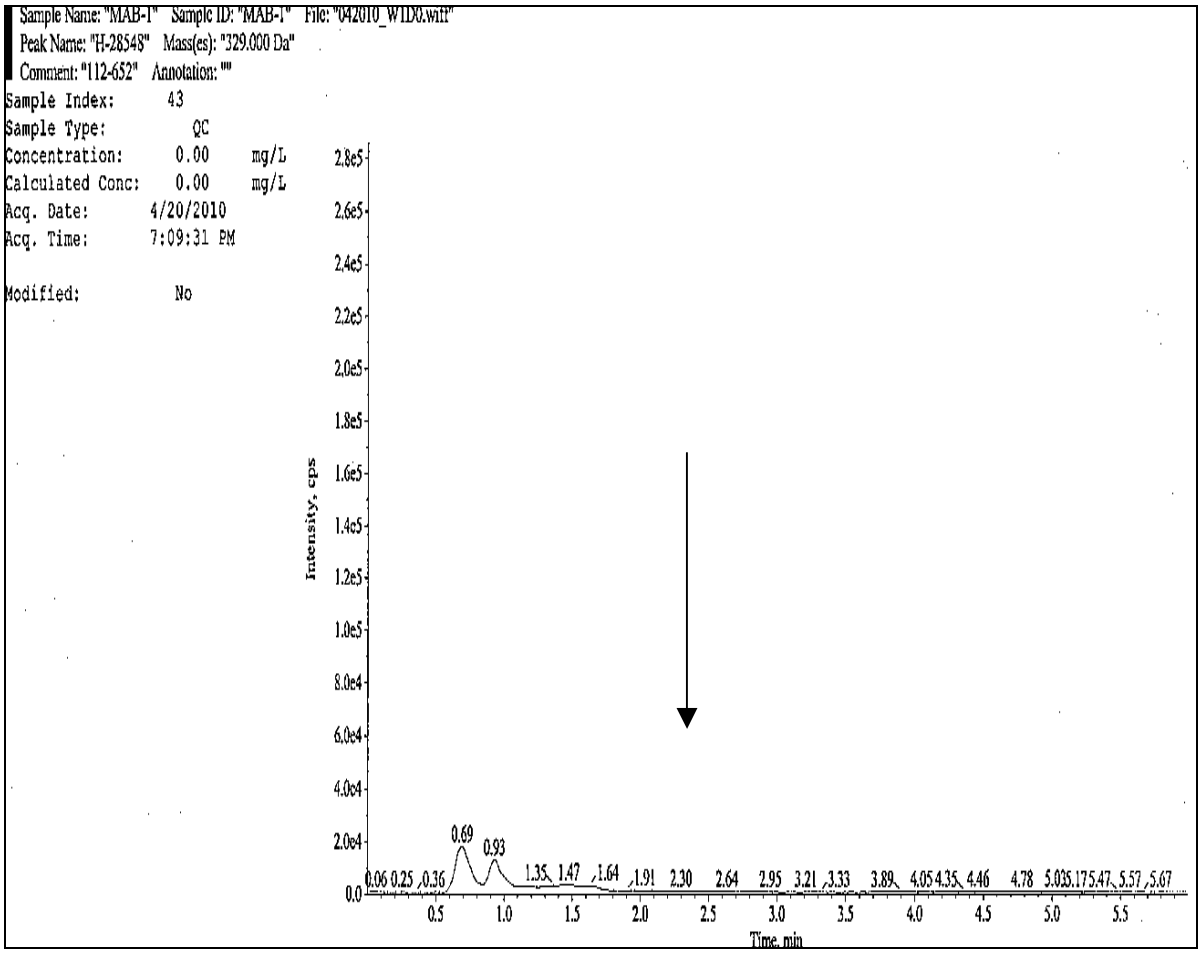
0.0100 µg/mL (0.100 ng on-column) The arrow indicates the retention time of H-28548 (r.t. 2.37).

Appendix XIV, Figure 4
Typical Chromatogram of a High-level H-28548 Calibration Standard



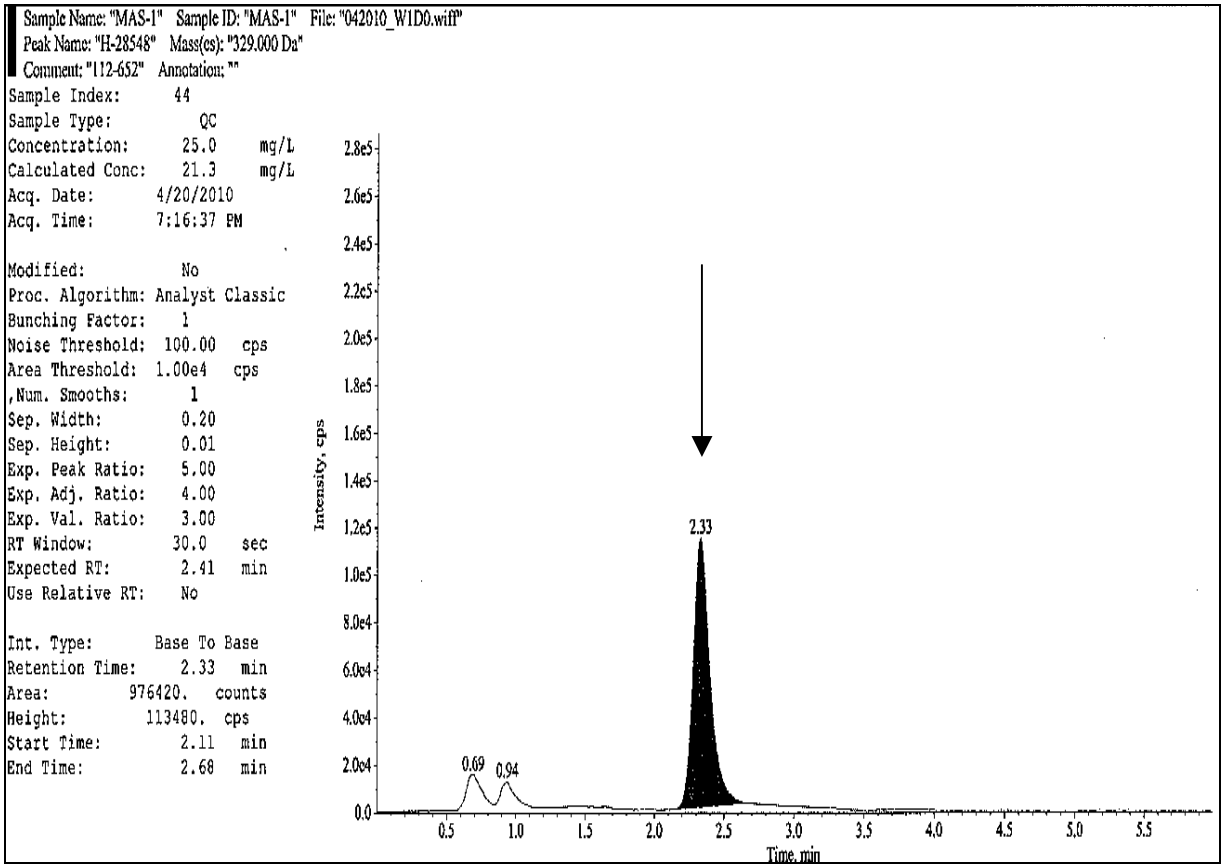
0.100 μg/mL (1.00 ng on-column) The arrow indicates the retention time of H-28548 (r.t. 2.37).

Appendix XIV, Figure 5
Typical Chromatogram of a Matrix Blank



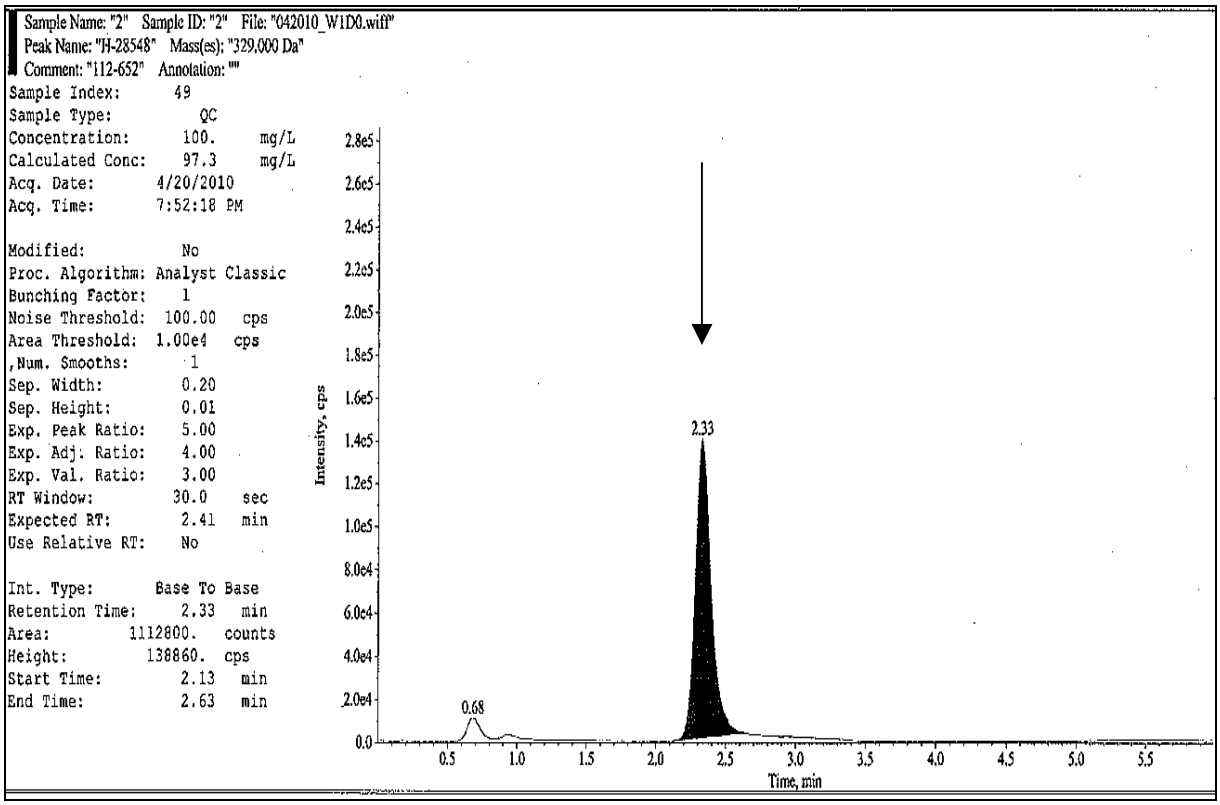
(112-652-MAB-1) The arrow indicates the approximate retention time of H-28548 (2.37 minutes).

Appendix XIV, Figure 6
Typical chromatogram of a matrix fortification



112-652-MAS-1, 25 ppm The arrow indicates the retention time of H-28548 (r.t. 2.33).

Appendix XIV, Figure 7
Typical Chromatogram of an Avian Diet Sample on Day 0



112-652-2 (100 ppm nominal) The arrow indicates the retention time of H-28548 (r.t. 2.33)

Appendix XV. The Analysis of H-28548 in Blood, Liver and Eggs

Appendix XV, Table 1
Typical LC/MS/MS Operating Conditions

INSTRUMENT:	Hewlett-Packard Series 1100 High Performance Liquid Chromatograph (HPLC) coupled with an Perkin Elmer SCIEX API 100 Mass Spectrometer (MS)
ANALYTICAL COLUMN:	Thermo, Phenyl (50 mm x 2.1 mm, 5-µm particle size) analytical column. Guard Column Thermo, Phenyl (10 mm x 2.1 mm)
STOP TIME:	10.0 minutes
FLOW RATE:	250 µL/minute
OVEN TEMPERATURE:	40°C
MOBILE PHASE:	Channel A: 0.1% formic acid Channel B: Methanol

GRADIENT PROFILE:

Time	%A	%B
0.00	75.0	25.0
0.10	75.0	25.0
1.00	75.0	25.0
4.00	10.0	90.0
5.50	10.0	90.0
6.00	75.0	25.0
10.0	75.0	25.0

INJECTION VOLUME:	50 µl
H-28548 PEAK RETENTION TIME:	Approximately 6.03 minutes
ION SOURCE:	Turbo Ion Spray, H=~10; L=~3
ION MONITORED:	329 amu (dwell time 300 msec.) quantification ion
LC/MS PARAMETERS:	NEB: 10.00 CUR: 8.00 IS: -4200 TEM: 450 DP: -1.00 FP: -110 EP:- 8.00

Appendix XV, Table 2
Examples of Equations Used in Calculations

The concentration of H-28548 found at the instrument was determined using the following equation:

$$\text{H-28548 concentration found at the instrument } (\mu g/L) = \frac{\text{Peak area response} - (\text{y-intercept})}{\text{Slope}}$$

Determination of Sample Residues (H-28548)

The concentration expressed as (μg/L or μg/Kg) for each sample was determined using the following equation:

$$\text{H-28548 found in sample } (\mu g/L \text{ or } \mu g/Kg) = \frac{\text{H-28548 found at the instrument } (\mu g/L) \times \text{Final volume (mL)} \times \text{Dilution factor}}{\text{Sample weight (g) or volume (mL)}}$$

The method limit of quantitation (LOQ) for these analyses was set at 7.5 (μg/L or μg/Kg) based upon product of the lowest analytical standard 0.250 μg/L and the dilution factor (30) of the matrix blank extract.

$$\text{LOQ} = \frac{\text{Concentration of lowest standard } (\mu g/L) \times \text{final volume (mL)} \times \text{final dilution}}{\text{Blank matrix weight (g) or volume (mL)}}$$

Fortification Recoveries

The ppm a.s. found in each sample is divided by the nominal concentration of each sample (fortified level, (μg/L or μg/Kg)). This ratio times 100 is the percent recovery of the method at that level of fortification.

$$\text{\% Recovery} = \frac{(\mu g/L \text{ or } \mu g/Kg) \text{ found for each sample}}{(\mu g/L \text{ or } \mu g/Kg) \text{ fortified for each sample}} \times 100$$

Appendix XV, Table 3
Matrix Blanks and Fortifications Analyzed Concurrently with Blood Samples

Sample		Concentration of H-28548 (µg/L)			
Number (112-652-)	Type	Fortified	Measured[1,2]	Percent Recovery	Mean Percent Recovery
MAB-B1	Matrix Blank	0	< LOQ		
MAS-B1	Matrix Fortification	25	26.2	105	102
MAS-B2	Matrix Fortification	10000	9760	98	
MAB-B2	Matrix Blank	0	< LOQ		
MAS-B3	Matrix Fortification	25	25.2	101	99
MAS-B4	Matrix Fortification	20000	19200	96	
MAB-B3	Matrix Blank	0	< LOQ		
MAS-B5	Matrix Fortification	25	26.1	104	103
MAS-B6	Matrix Fortification	1000	1030	103	
MAS-B7	Matrix Fortification	20000	20300	102	
MAB-B4	Matrix Blank	0	< LOQ		
MAS-B8	Matrix Fortification	25	22.6	90	96
MAS-B9	Matrix Fortification	1000	979	98	
MAS-B10	Matrix Fortification	20000	19800	99	
MAB-B5	Matrix Blank	0	< LOQ		
MAS-B11	Matrix Fortification	25	21.9	88	94
MAS-B12	Matrix Fortification	1000	983	98	
MAS-B13	Matrix Fortification	20000	19100	96	

[1]The method limit of quantitation (LOQ) for these analyses was set at 7.5 (µg/L) based upon product of the lowest analytical standard 0.250 µg/L and the dilution factor (30) of the matrix blank extract.
[2]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyzes 0.250 µg/L

Appendix XV, Table 4
Verification of H-28548 Concentrations in Blood Samples

Nominal Concentration of Diet (ppm)	Sample I.D. Number (112-652-)	Pen	Sex	H-28548 Concentration Measured[1,2,.3] (µg/L)	Mean Measured Standard Deviation (µg/L)
0	B1	401	Male	< LOQ	
	B2	401	Female	< LOQ	
	B13	407	Male	< LOQ	
	B14	407	Female	< LOQ	
	B17	409	Male	< LOQ	
	B18	409	Female	< LOQ	
	B29	415	Male	< LOQ	
	B30	415	Female	< LOQ	
	B31	416	Male	< LOQ	
	B32	416	Female	< LOQ	
100	B35	418	Male	1720	$\bar{x}$=1220
	B36	418	Female	2010	SD =714
	B39	420	Male	549	
	B40	420	Female	2080	
	B47	424	Male	362	
	B48	424	Female	399	
	B53	427	Male	1470	
	B54	427	Female	1720	
	B59	430	Male	376	
	B60	430	Female	1510	

[1]The method limit of quantitation (LOQ) for these analyses was set at 7.5 (µg/L) based upon product of the lowest analytical standard 0.250 µg/L and the dilution factor (30) of the matrix blank extract
[2]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyzes 0.250 µg/L
[3]Measured values were not corrected for mean procedural recoveries based on sample sets (see Table 3).

Appendix XV, Table 4 (continued)
Verification of H-28548 Concentrations in Blood Samples

Nominal Concentration of Diet (ppm)	Sample I.D. Number (112-652-)	Pen	Sex	H-28548 Concentration Measured[1,2,3] (µg/L)	Mean Measured Standard Deviation (µg/L)
500	B65	433	Male	482	$\bar{x}$ =2678
	B66	433	Female	365	SD =2336
	B71	436	Male	919	
	B72	436	Female	5430	
	B79	440	Male	3460	
	B80	440	Female	4960	
	B87	444	Male	449	
	B88	444	Female	561	
	B93	447	Male	5950	
	B94	447	Female	4200	
1000	B97	449	Male	15900	$\bar{x}$ =5110
	B98	449	Female	1720	SD =5346
	B101	451	Male	851	
	B102	451	Female	785	
	B105	453	Male	1450	
	B106	453	Female	12000	
	B109	455	Male	6560	
	B110	455	Female	3810	
	B127	464	Male	448	
	B128	464	Female	7580	

[1]The method limit of quantitation (LOQ) for these analyses was set at 7.5 (µg/L) based upon product of the lowest analytical standard 0.250 µg/L and the dilution factor (30) of the matrix blank extract.
[2]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyzes 0.250 µg/L
[3]Measured values were not corrected for mean procedural recoveries based on sample sets (see Table 3)

Appendix XV, Table 5
Verification of H-28548 Concentrations in Blood Samples in Offspring

Nominal Concentration of Diet (ppm.)	Sample I.D. Number (112-652-)	Pen	H-28548 Concentration Measured[1,2,3] (µg/L)	Mean Measured Standard Deviation (µg/L)
0	B129	401	< LOQ	$\bar{X}$ =-
	B130	401	< LOQ	SD =-
	B141	407	< LOQ	
	B142	407	< LOQ	
	B145	409	< LOQ	
	B146	409	< LOQ	
	B157	415	< LOQ	
	B158	415	< LOQ	
	B159	416	< LOQ	
	B160	416	< LOQ	
100	B163	418	< LOQ	$\bar{X}$ =-
	B164	418	< LOQ	SD =
	B167	420	< LOQ	
	B168	420	< LOQ	
	B175	424	< LOQ	
	B176	424	< LOQ	
	B181	427	< LOQ	
	B182	427	< LOQ	
	B187	430	< LOQ	
	B188	430	< LOQ	

[1]The method limit of quantitation (LOQ) for these analyses was set at 7.5 (µg/L) based upon product of the lowest analytical standard 0.250 µg/L and the dilution factor (30) of the matrix blank extract.
[2]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyzes 0.250 µg/L
[3]Measured values were not corrected for mean procedural recoveries based on sample sets (see Table 3)

Appendix XV, Table 5 (continued)
Verification of H-28548 Concentrations in Blood Samples Offspring

Nominal Concentration of Diet (ppm)	Sample I.D. Number (112-652-)	Pen	H-28548 Concentration Measured[1,2,3] (µg/L)	Mean Measured Standard Deviation (µg/L)
500	B193	433	< LOQ	
	B194	433	< LOQ	$\bar{X}$ =-
	B199	436	< LOQ	SD =-
	B200	436	< LOQ	
	B207	440	< LOQ	
	B208	440	< LOQ	
	B215	444	< LOQ	
	B216	444	< LOQ	
	B221	447	< LOQ	
	B222	447	< LOQ	
1000	B225	449	< LOQ	$\bar{X}$ =-
	B226	449	< LOQ	SD =-
	B229	451	< LOQ	
	B230	451	< LOQ	
	B233	453	< LOQ	
	B234	453	< LOQ	
	B237	455	< LOQ	
	B238	455	< LOQ	
	B255	464	< LOQ	
	B256	464	< LOQ	

[1]The method limit of quantitation (LOQ) for these analyses was set at 7.5 (µg/L) based upon product of the lowest analytical standard 0.250 µg/L and the dilution factor (30) of the matrix blank extract.
[2]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyzes 0.250 µg/L
[3]Measured values were not corrected for mean procedural recoveries based on sample sets (see Table 3)

Appendix XV, Table 6
Matrix Blanks and Fortifications Analyzed Concurrently with Liver Samples

Sample		Concentration of H-28548 (µg/Kg)			
Number (112-652-)	Type	Fortified	Measured[1,2]	Percent Recovery	Mean Percent Recovery
MAB-2L	Matrix Blank	0	< LOQ		
MAS-3L	Matrix Fortification	25	19.6	79	87
MAS-4L	Matrix Fortification	1000	935	94	
MAB-3L	Matrix Blank	0	< LOQ		
MAS-5L	Matrix Fortification	25	21.0	84	97
MAS-6L	Matrix Fortification	10000	11000	110	
MAB-4L	Matrix Blank	0	< LOQ		
MAS-7L	Matrix Fortification	25	19.6	78	86
MAS-8L	Matrix Fortification	1000	842	84	
MAS-9L	Matrix Fortification	10000	9600	96	
MAB-5L	Matrix Blank	0	< LOQ		
MAS-10L	Matrix Fortification	25	22.4	90	93
MAS-11L	Matrix Fortification	1000	992	99	
MAS-12L	Matrix Fortification	10000	8980	90	
MAB-6L	Matrix Blank	0	< LOQ		
MAS-13L	Matrix Fortification	25	20.3	81	82
MAS-14L	Matrix Fortification	1000	813	81	
MAS-15L	Matrix Fortification	10000	8280	83	

[1]The method limit of quantitation (LOQ) for these analyses was set at 3.75 (µg/Kg) based upon product of the lowest analytical standard 0.250 µg/L and the dilution factor (15) of the matrix blank extract.
[2]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyzes 0.250 µg/L

Appendix XV, Table 7
Verification of H-28548 Concentrations in Liver Samples in Adults

Nominal Concentration (ppm.)	Sample I.D. Number (112-652-)	Pen	Sex	H-28548 Concentration Measured[1,2,3] (µg/Kg)	Mean Measured Standard Deviation (µg/Kg)
0	L1	401	Male	< LOQ	
	L2	401	Female	< LOQ	
	L13	407	Male	< LOQ	
	L14	407	Female	< LOQ	
	L17	409	Male	< LOQ	
	L18	409	Female	< LOQ	
	L29	415	Male	< LOQ	
	L30	415	Female	< LOQ	
	L31	416	Male	< LOQ	
	L32	416	Female	< LOQ	
100	L35	418	Male	616	$\bar{x}$ =438
	L36	418	Female	772	SD =301
	L39	420	Male	173	
	L40	420	Female	918	
	L47	424	Male	145	
	L48	424	Female	172	
	L53	427	Male	505	
	L54	427	Female	668	
	L59	430	Male	48.0	
	L60	430	Female	364	

[1]The method limit of quantitation (LOQ) for these analyses was set at 3.75 (µg/Kg) based upon product of the lowest analytical standard 0.250 µg/L and the dilution factor (15) of the matrix blank extract.
[2]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyzes 0.250 µg/L
[3]Measured values were not corrected for mean procedural recoveries based on sample sets (see Table 3)

Appendix XV, Table 7 (continued)
Verification of H-28548 Concentrations in Liver Samples in Adults

Nominal Concentration (ppm)	Sample I.D. Number (112-652-)	Pen	Sex	H-28548 Concentration Measured[1,2,3] (µg/Kg)	Mean Measured Standard Deviation (µg/Kg)
500	L65	433	Male	197	
	L66	433	Female	187	$\bar{x}$ =991.1
	L71	436	Male	366	SD =858.6
	L72	436	Female	1550	
	L79	440	Male	1110	
	L80	440	Female	2600	
	L87	444	Male	225	
	L88	444	Female	296	
	L93	447	Male	1740	
	L94	447	Female	1640	
1000	L97	449	Male	4290	$\bar{x}$ =2008
	L98	449	Female	622	SD =1730
	L101	451	Male	467	
	L102	451	Female	445	
	L105	453	Male	744	
	L106	453	Female	4400	
	L109	455	Male	3010	
	L110	455	Female	2030	
	L127	464	Male	212	
	L128	464	Female	3860	

[1]The method limit of quantitation (LOQ) for these analyses was set at 3.75 (µg/Kg) based upon product of the lowest analytical standard 0.250 µg/L and the dilution factor (15) of the matrix blank extract.
[2]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyzes 0.250 µg/L
[3]Measured values were not corrected for mean procedural recoveries based on sample sets (see Table 3)

Appendix XV, Table 8
Verification of H-28548 Concentrations in Liver Samples in Offspring

Nominal Concentration (ppm.)	Sample I.D. Number (112-652-)	Pen	H-28548 Concentration Measured[1,2,3] (µg/Kg)	Mean Measured Standard Deviation (µg/Kg)
0	L129	401	< LOQ	
	L130	401	< LOQ	
	L141	407	< LOQ	
	L142	407	< LOQ	
	L145	409	< LOQ	
	L146	409	< LOQ	
	L157	415	< LOQ	
	L158	415	< LOQ	
	L159	416	< LOQ	
	L160	416	< LOQ	
100	L163	418	< LOQ	$\bar{X}$ =-
	L164	418	< LOQ	SD =
	L167	420	< LOQ	
	L168	420	< LOQ	
	L175	424	< LOQ	
	L176	424	< LOQ	
	L181	427	< LOQ	
	L182	427	< LOQ	
	L187	430	< LOQ	
	L188	430	< LOQ	

[1]The method limit of quantitation (LOQ) for these analyses was set at 3.75 (µg/Kg) based upon product of the lowest analytical standard 0.250 µg/L and the dilution factor (15) of the matrix blank extract.
[2]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyzes 0.250 µg/L
[3]Measured values were not corrected for mean procedural recoveries based on sample sets (see Table 3)

Appendix XV, Table 8 (continued)
Verification of H-28548 Concentrations in Liver Samples Offspring

Nominal Concentration (ppm)	Sample I.D. Number (112-652-)	Pen	H-28548 Concentration Measured[1,2,3] (µg/Kg)	Mean Measured Standard Deviation (µg/Kg)
500	L193	433	6.10	
	L194	433	7.96	$\bar{x}$ =10.2
	L199	436	7.90	SD =4.03
	L200	436	15.5	
	L207	440	< LOQ	
	L208	440	< LOQ	
	L215	444	13.3	
	L216	444	< LOQ	
	L221	447	< LOQ	
	L222	447	< LOQ	
1000	L225	449	< LOQ	$\bar{x}$ =6.57 ± 1.09
	L226	449	< LOQ	
	L229	451	< LOQ	
	L230	451	7.34	
	L233	453	< LOQ	
	L234	453	< LOQ	
	L237	455	5.80	
	L238	455	< LOQ	
	L255	464	< LOQ	
	L256	464	< LOQ	

[1]The method limit of quantitation (LOQ) for these analyses was set at 3.75 (µg/Kg) based upon product of the lowest analytical standard 0.250 µg/L and the dilution factor (15) of the matrix blank extract.
[2]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyzes 0.250 µg/L
[3]Measured values were not corrected for mean procedural recoveries based on sample sets (see Table 3)

Appendix XV, Table 9
Matrix Blanks and Fortifications Analyzed Concurrently with Albumin Sample

Sample		Concentration of H-28548 (µg/Kg)			
Number (112-652-)	Type	Fortified	Measured[1,2]	Percent Recovery	Mean Percent Recovery
MAB-A1	Matrix Blank	0	< LOQ		
MAS-A1	Matrix Fortification	25	27.4	109	102
MAS-A2	Matrix Fortification	20000	18700	94	
MAB-A2	Matrix Blank	0	< LOQ		
MAS-A3	Matrix Fortification	25	30	120	113
MAS-A4	Matrix Fortification	1000	1020	102	
MAS-A5	Matrix Fortification	20000	23300	117	

[1]The method limit of quantitation (LOQ) for these analyses was set at 3.75 (µg/Kg) based upon product of the lowest analytical standard 0.250 µg/L and the dilution factor (15) of the matrix blank extract.
[2]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyzes 0.250 µg/L .

Appendix XV, Table 10
Matrix Blanks and Fortifications Analyzed Concurrently with Yolk Samples

Sample		Concentration of H-28548 (µg/Kg)			
Number (112-652-)	Type	Fortified	Measured[1,2]	Percent Recovery	Mean Percent Recovery
MAB-Y1	Matrix Blank	0	< LOQ		
MAS-Y1	Matrix Fortification	25	21.5	86	90
MAS-Y2	Matrix Fortification	20000	18800	94	
MAB-Y4	Matrix Blank	0	< LOQ		
MAS-Y9	Matrix Fortification	25	19.2	77	90
MAS-Y10	Matrix Fortification	1000	822	82	
MAS-Y11	Matrix Fortification	20000	22100	111	

[1]The method limit of quantitation (LOQ) for these analyses was set at 6.25 (µg/Kg) based upon product of the lowest analytical standard 0.250 µg/L and the dilution factor (25) of the matrix blank extract.
[2]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyzes 0.250 µg/L.

Appendix XV, Table 11
Matrix Blanks and Fortifications Analyzed Concurrently with Egg Shell Samples

Sample		Concentration of H-28548 (µg/Kg)			
Number (112-652-)	Type	Fortified	Measured[1,2]	Percent Recovery	Mean Percent Recovery
MAB-S1	Matrix Blank	0	< LOQ	-	
MAS-S1	Matrix Fortification	25	28.9	116	101
MAS-S2	Matrix Fortification	1000	921	92	
MAS-S3	Matrix Fortification	20000	19200	96	

[1]The method limit of quantitation (LOQ) for these analyses was set at 3.75 (µg/Kg) based upon product of the lowest analytical standard 0.250 µg/L and the dilution factor (15) of the matrix blank extract.
[2]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyzes 0.250 µg/L.

Appendix XV, Table 12
Verification of H-28548 Concentrations in Egg Component Samples

Nominal Concentration (ppm.)	Sample I.D. Number (112-652-A, Y & S)	Pen	H-28548 Concentration: Albumin Measured[1,2,3] (µg/Kg)	Mean Measured Standard Deviation (µg/Kg)	Yolks Measured[1,2,3] (µg/Kg)	Mean Measured Standard Deviation[2] (µg/Kg)	Shells Measured[1,2,3, 4] (µg/Kg)	Mean Measured Standard Deviation (µg/Kg)
0	65A,Y& S	401	< LOQ		< LOQ		36.5	
	68A,Y& S	407	< LOQ		< LOQ		9.23	$\bar{x}$=23.1
	69A,Y& S	409	< LOQ		< LOQ		4.12	SD =4.81
	136A,Y& S	415	< LOQ		< LOQ		36.1	
	40A, Y & S	416	< LOQ		< LOQ		29.5	
100	41A,Y& S	418	99.3	$\bar{x}$=56.2	2090	$\bar{x}$=1361	16.8	$\bar{x}$=105
	42A,Y& S	420	52.7	SD =24.5	1530	SD =524	13.5	SD =170
	44A,Y& S	424	45.2		676		406	
	78A,Y& S	427	40.9		1100		60.2	
	47 A,Y& S	430	42.7		1410		26.0	
500	81A,Y& S	433	330	$\bar{x}$=240	7080	$\bar{x}$=7118	102	$\bar{x}$=83.4
	114A,Y& S	436	118	SD =87.4	5540	SD =1128	102	SD =17.1
	52A,Y& S	440	192		8440		69.4	
	246A,Y& S	444	312		6630		74.0	
	88A,Y& S	447	250		7900		69.4	
1000	89A,Y& S	449	372	$\bar{x}$=412	11600	$\bar{x}$=12448	288	$\bar{x}$=216
	26A,Y& S	451	366	SD =189	17400	SD =3120	325	SD =95.5
	91A,Y& S	453	312		9940		227	
	92A,Y& S	455	742		13400		135	
	64A,Y& S	464	270		9900		103	

[1]The method limit of quantitation (LOQ) for these analyses was set at 3.75 (µg/Kg) for egg albumin, eggshells and 6.25 (µg/Kg) for egg yolks respectively, based upon product of the lowest analytical standard 0.250 µg/L and the dilution factor (15 or 25) of the matrix blank extract.
[2]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyzes 0.250 µg/L.
[3]Measured values were not corrected for mean procedural recoveries based on sample sets (see Tables 9, 10 and 11).
[4]Residues found in the control eggshells may have come from residual diet dust particles adhering to the eggs during the collection process and rinsing with reverse osmosis water was not rigorous enough to remove all traces of diet.

Appendix XV, Table 13
Matrix Blanks and Fortifications Analyzed Concurrently with Egg Membrane Samples

Sample		Concentration of H-28548 (µg/Kg)			
Number (112-652-)	Type	Fortified	Measured[1]	Percent Recovery	Mean Percent Recovery
MAB-M1	Matrix Blank	0	13.6		
MAS-M1	Matrix Fortification	25	43.8	175	133
MAS-M2	Matrix Fortification	1000	1130	113	
MAS-M3	Matrix Fortification	20000	22500	112	

[1]The method limit of quantitation (LOQ) for these analyses was set at 9.38 (µg/Kg) based upon product of the lowest analytical standard 0.250 µg/L and the dilution factor (37.5) of the matrix blank extract.
[2]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyzes 0.250 µg/L.

Appendix XV, Table 14
Verification of H-28548 Concentrations in Egg Membrane Samples

Nominal Concentration (ppm)	Sample I.D. Number (112-652-)	Pen	Lot	Composite Sample I.D. Number (112-652)	H-28548 Concentration Measured[1,2,3] (µg/Kg)
0	M-65	401	C	CM1	< LOQ
	M-67	405	C		
	M-68	407	C		
	M-69	409	C		
	M-70	411	C		
	M-71	413	C		
100	M-41	418	B	CM2	37.1
	M-42	420	B		
	M-43	422	B		
	M-44	424	B		
	M-45	426	B		
	M-46	428	B		
	M-47	430	B		

[1]The method limit of quantitation (LOQ) for these analyses was set at 9.38 (µg/Kg) based upon product of the lowest analytical standard 0.250 µg/L and the dilution factor (37.5) of the matrix blank extract.
[2]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyzes 0.250 µg/L
[3]Measured values were not corrected for mean procedural recovery based on sample set (see Table 3)

Appendix XV, Table 14 (continued)
Verification of H-28548 Concentrations in Egg Membrane Samples

Nominal Concentration (ppm)	Sample I.D. Number (112-652-)	Pen	Lot	Composite Sample I.D. Number (112-652)	H-28548 Concentration Measured[1,2,3] (µg/Kg)
500	M-81	433	C	CM3	170
	M-82	435	C		
	M-84	439	C		
	M-85	441	C		
	M-86	443	C		
	M-87	445	C		
	M-88	447	C		
1000	M-89	449	C	CM4	128
	M-90	451	C		
	M-91	453	C		
	M-92	455	C		
	M-94	459	C		
	M-96	463	C		

[1]The method limit of quantitation (LOQ) for these analyses was set at 9.38 (µg/Kg) based upon product of the lowest analytical standard 0.250 µg/L and the dilution factor (37.5) of the matrix blank extract.
[2]The limit of detection (LOD) was set at the lowest standard analyzed during the sample analyzes 0.250 µg/L
[3]Measured values were not corrected for mean procedural recovery based on sample set (see Table 3)

Appendix XV, Figure 1
Typical analytical method outline for the analysis of H-28548 in blood samples

1. Remove samples from freezer. Allow to come to room temperature.

2. Remove 0.400 mL of plasma from sample and transfer to a 10 mL Oakridge centrifuge tube. Fortify samples as necessary with an aqueous H-28548 stock. Mix Samples well.

3. Add 2.6 mL of water:formic acid (50:50) vortex for 15 sec and sonicate in an ultrasonic water bath for ~15 minutes. Then centrifuge the sample at ~ 10000 rpm for ~ 30 minutes. Filter samples through 0.45 polypropylene filter.

4. Tranfer 2.50 mL of the solution to a C-18 SPE column that was prepared by washing with 2 mL of methanol followed by 2 mL of HPLC grade water. Do not use vacuum.

5. Wash the loaded cartridges with 2 mL of methanol:water (40:60). Do not use vacuum. When wash is finished eluting turn on full vacuum until dry.

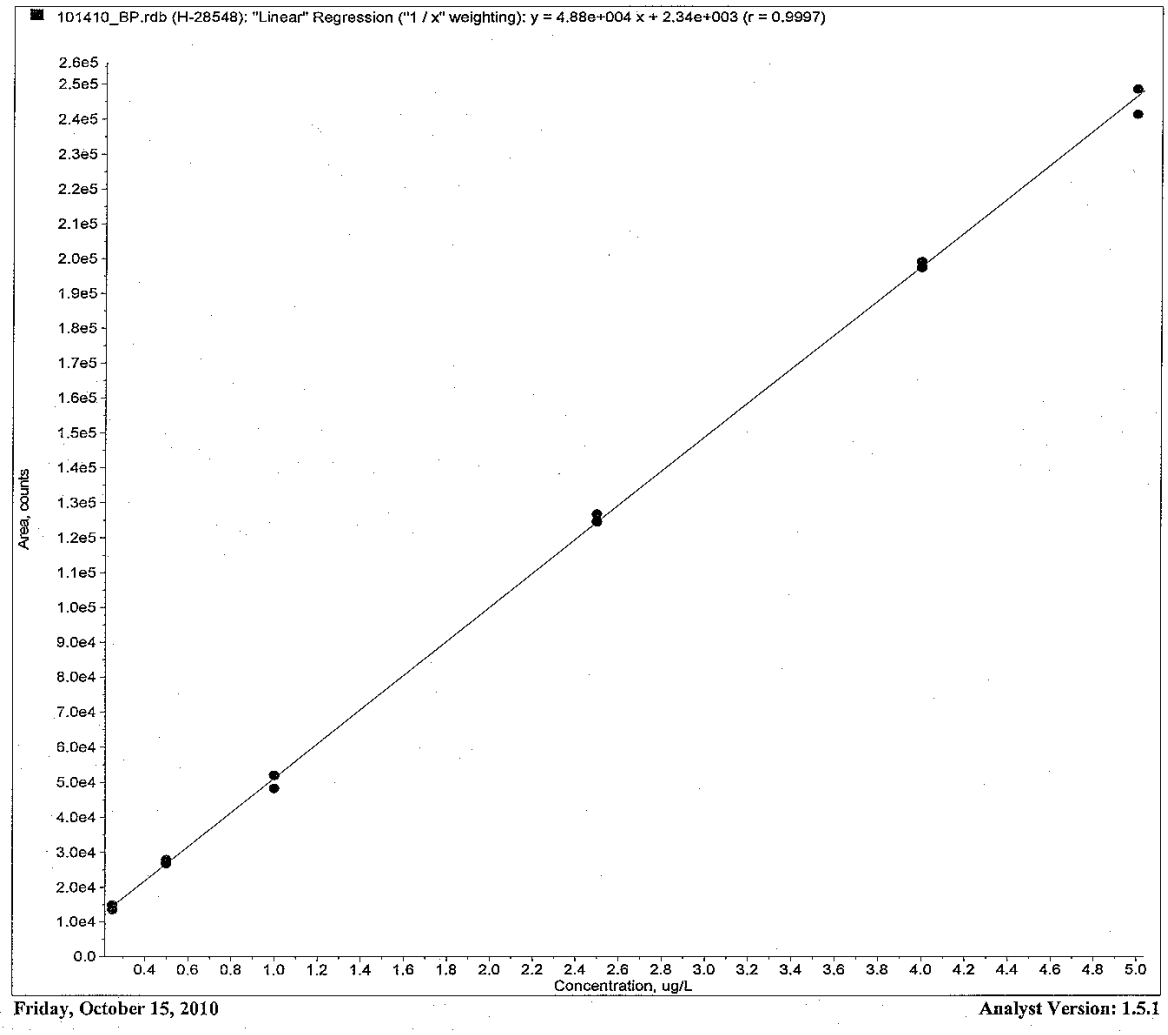
6. Elute samples with concentration of 0 to 100 ppb with 2.00 mL of MEOH. Elute samples with concentration of 200 ppb with 5.00 mL of MEOH. Elute samples with concentration of 300 to 200000 ppb with 10.0 mL of MEOH. Do not use vacuum. When samples are finished eluting turn on vacuum to dry.

7. Filter the extracts through 0.2 um polypropylene filter. QC samples were diluted as follows with MEOH:H_20 (20:80) and study samples were diluted into the range of the calibration curve in a similar manner.

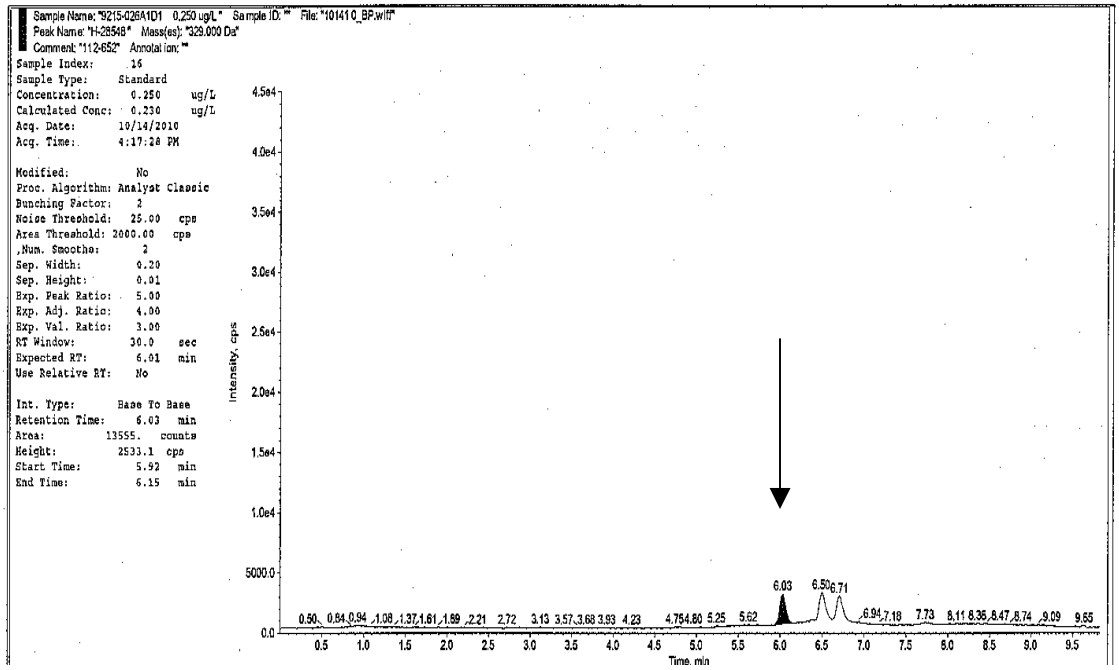
   For samples with concentrations of 0 to 25 ppb dilute 0.200 mL to 1.00 mL, with HPLC grade water
   For samples with concentrations of 1000 ppb dilute 0.100 mL to 1.00 mL, with HPLC grade water
   For samples with concentrations 10000 to 20,000 ppb dilute 0.200 mL to 10.0 mL, then 0.200 mL to 1.00 mL.
   For samples with concentrations of 200000 ppb dilute 0.200 mL to 10.0 mL, then 0.200 mL to 10.0 mL, then 0.200 mL to 10.0 mL.

8. Ampulate samples for analysis on LC/MS

Appendix XV, Figure 2
Typical calibration curve for H-28548

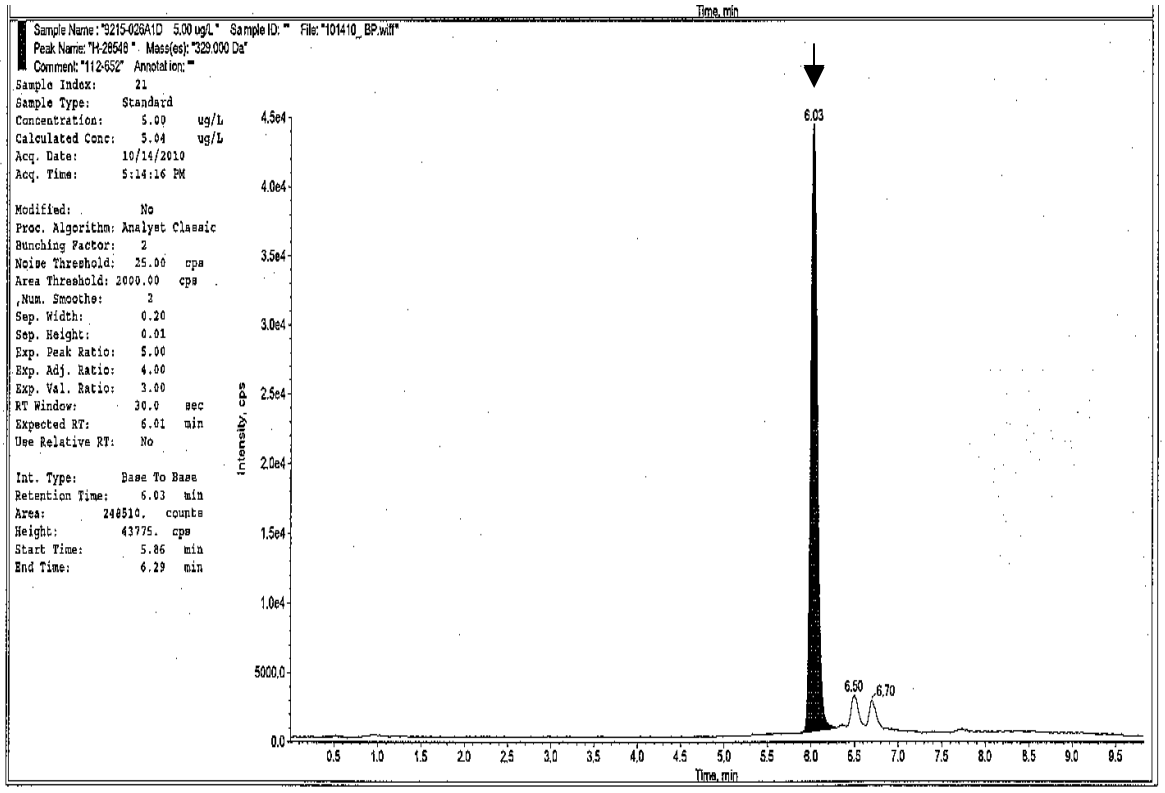


Appendix XV, Figure 3
Typical chromatogram of a low-level H-28548 calibration standard, 0.250 μg/L



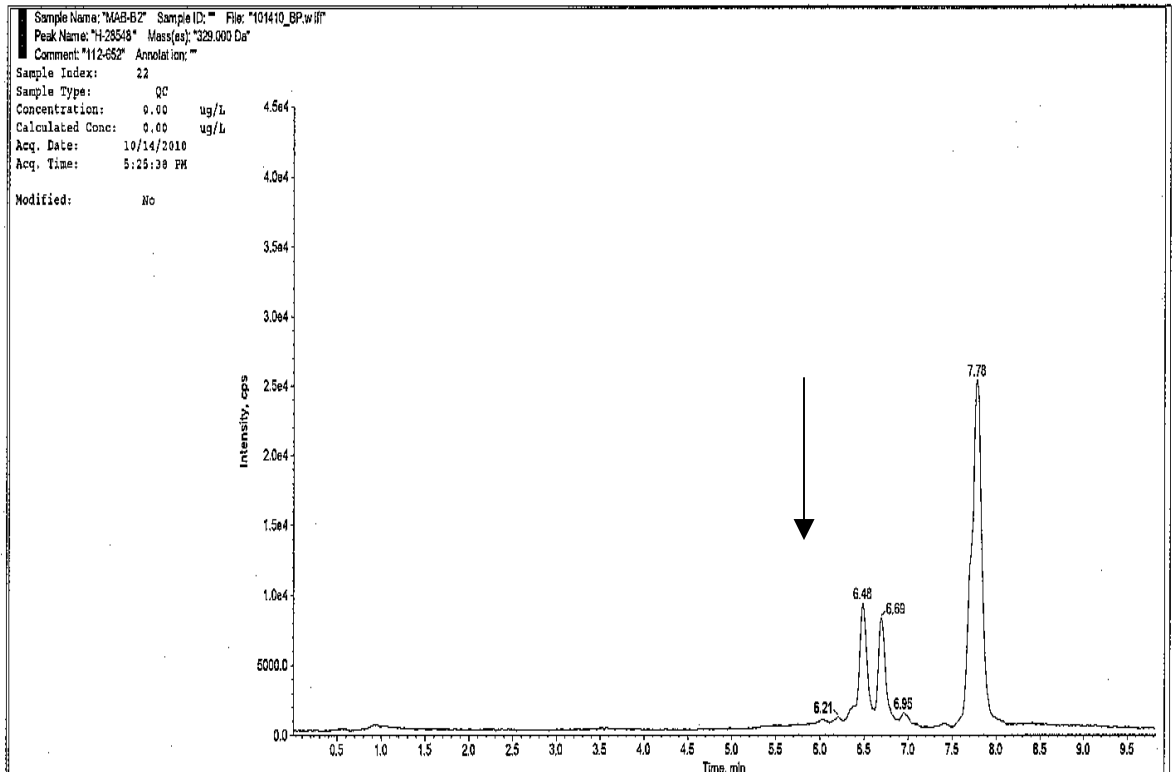
The arrow indicates the retention time of H-28548 (r.t. 6.03)

Appendix XV, Figure 4
Typical chromatogram of a high-level H-28548 calibration standard, 5.00 μg/L



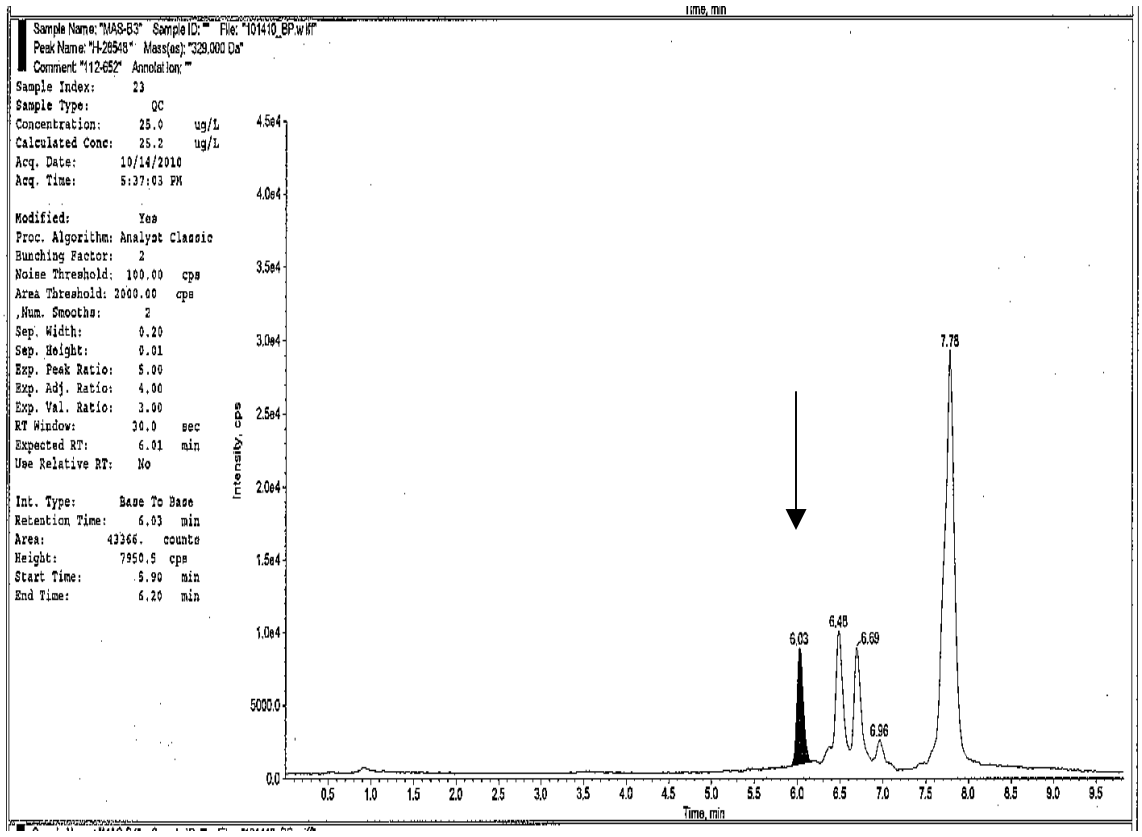
The arrow indicates the retention time of H-28548 (r.t. 6.03)

Appendix XV, Figure 5
Typical chromatogram of a blood matrix blank, (112-652-MAB-B2)



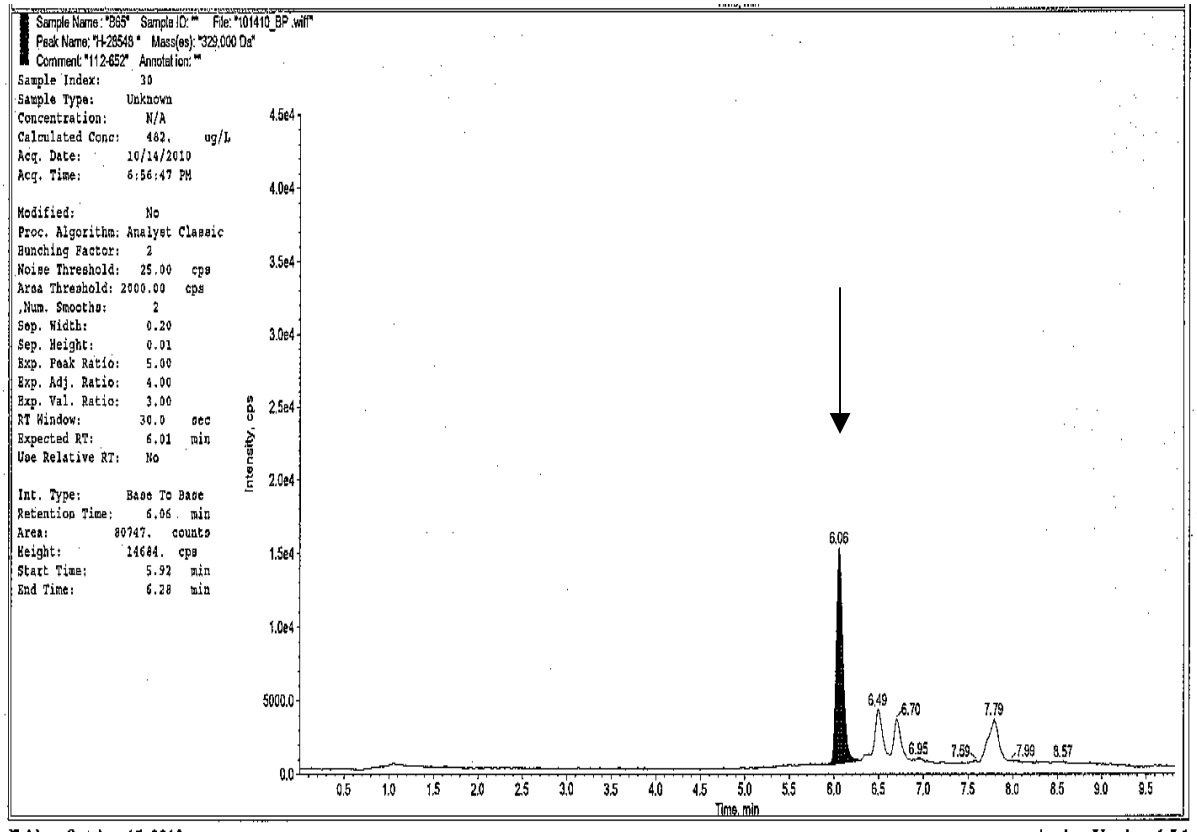
The arrow indicates the approximate retention time of H-28548 (6.03).

Appendix XV, Figure 6
Typical chromatogram of a matrix fortification, 112-652-MAS-B3, 25 ppb



The arrow indicates the retention time of H-28548 (r.t. 6.03)

Appendix XV, Figure 7
Typical chromatogram of an avian blood sample 112-652 B65 (from birds exposed to 500 ppm test level)



The arrow indicates the retention time of H-28548 (r.t. 6.03)

Appendix XV, Figure 8
Typical analytical method outline for the analysis of H-28548 in liver samples

1. Remove samples from freezer. Allow to come to room temperature.

2. Remove 0.500 g of liver from homogenized sample and transfer to a 10 mL Oakridge centrifuge tube. Fortify samples as necessary with an aqueous H-28548 stock. Mix samples well. Add 100 µL of ion pairing reagent. Add 3.0 mL of MTBE grind sample with motorized disposable pestle, for ~30 seconds.

3. Vortex samples for 15 sec and sonicate in an ultrasonic water bath for ~15 minutes. Then centrifuge the sample at ~ 10000 rpm for ~ 30 minutes. Filter samples through 0.2 um polypropylene filter.

4. Remove an aliquot of sample extract and n-vap as follows:
   For samples with concentrations of 0 to 50 ppb remove 2.00 mL, bring to dryness and reconstitute with 1.00 mL of MEOH.
   For samples with concentrations of 100 to 250 ppb remove 1.00 mL, bring to dryness and reconstitute with 2.00 mL of MEOH.
   For samples with concentrations of 300 to 10000 ppb remove 1.00 mL, bring to dryness and reconstitute with 10.0 mL of MEOH.
   For samples with concentrations of 200000 ppb remove 0.500 mL, bring to dryness and reconstitute with 10.0 mL of MEOH

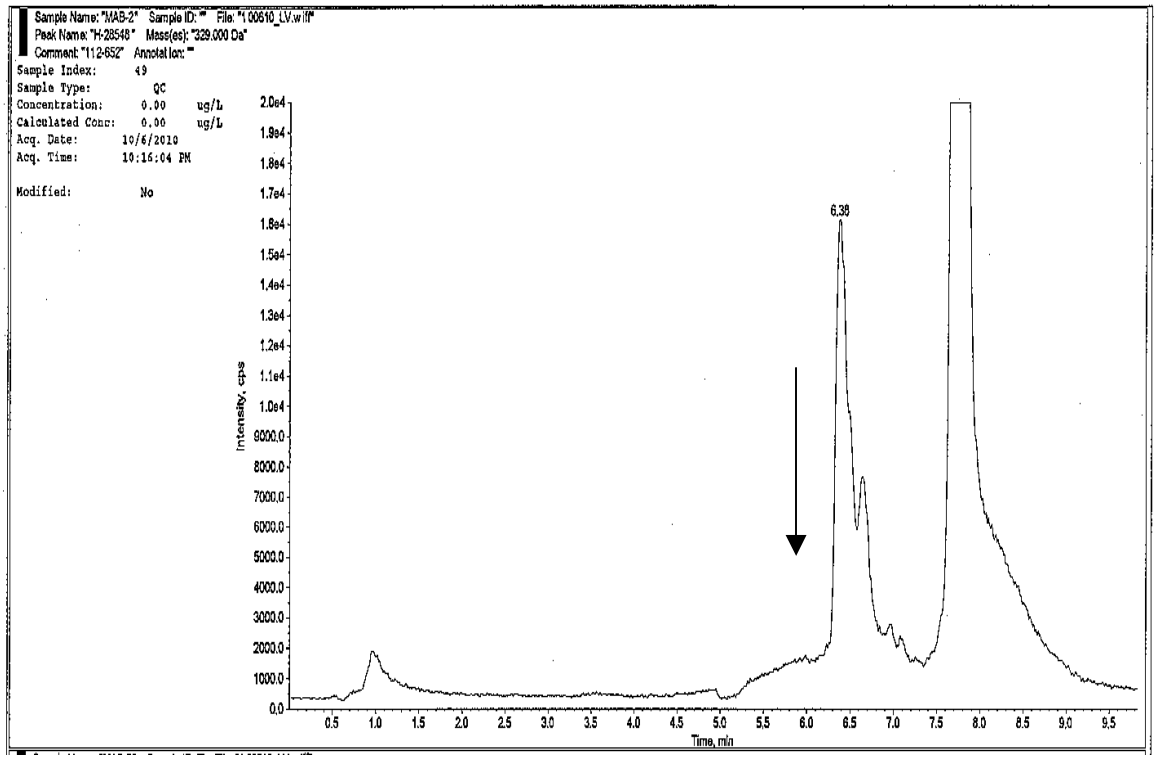
   Reconstitute all samples with aid of sonication.

5. QC samples were diluted as follows with MEOH:H20 (20:80) and study samples were diluted into the range of the calibration curve in a similar manner:

   For samples with concentrations of 0 to 1000 ppb dilute 0.200 mL to 1.00 mL with HPLC grade water
   For samples with concentrations of 10000 ppb dilute 0.200 mL to 10.0 mL with MEOH:H2O (20:80).
   For samples with concentrations of 200000 ppb dilute 0.100 mL to 10.0 mL with MEOH:H2O (20:80), then 0.200 mL to 1.00 mL with MEOH:H2O (20:80).

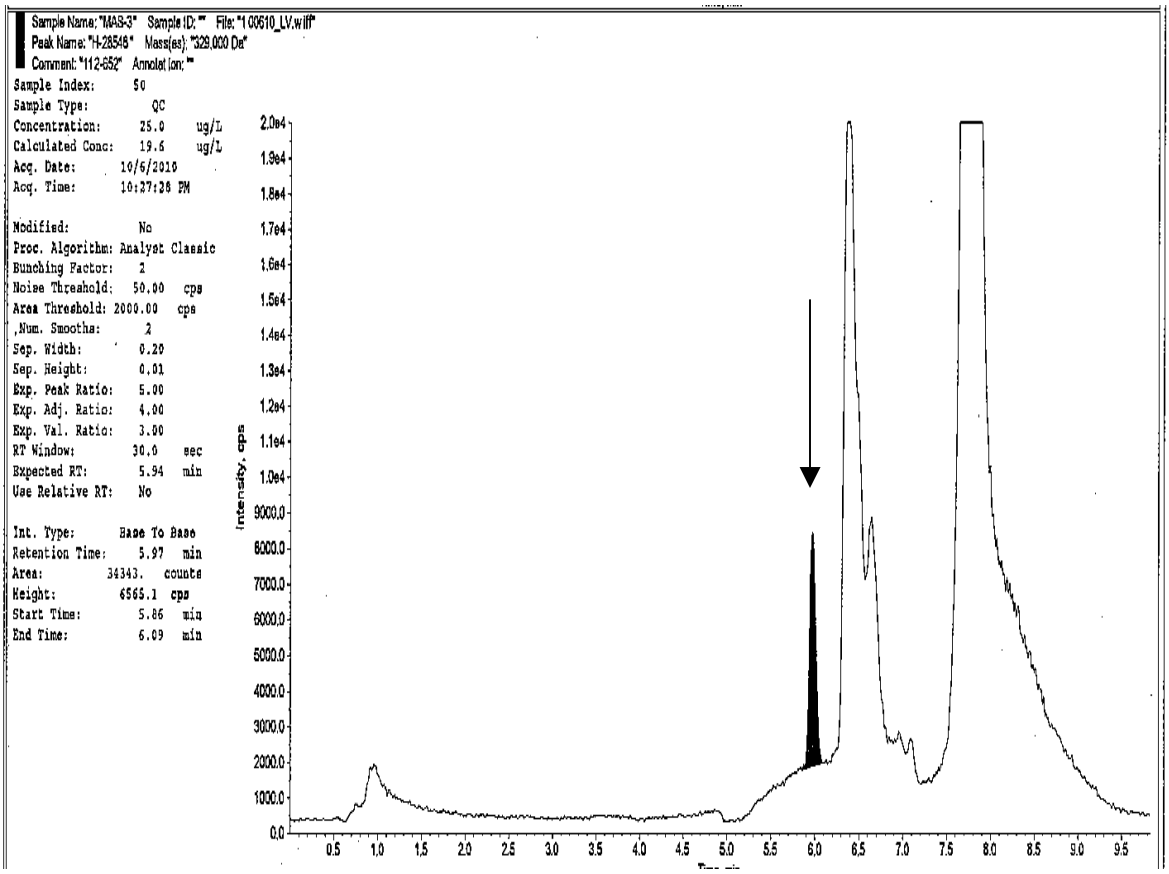
6. Ampulate samples for analysis on LC/MS

Appendix XV, Figure 9
Typical chromatogram of a liver matrix blank, (112-652-MAB-2L).



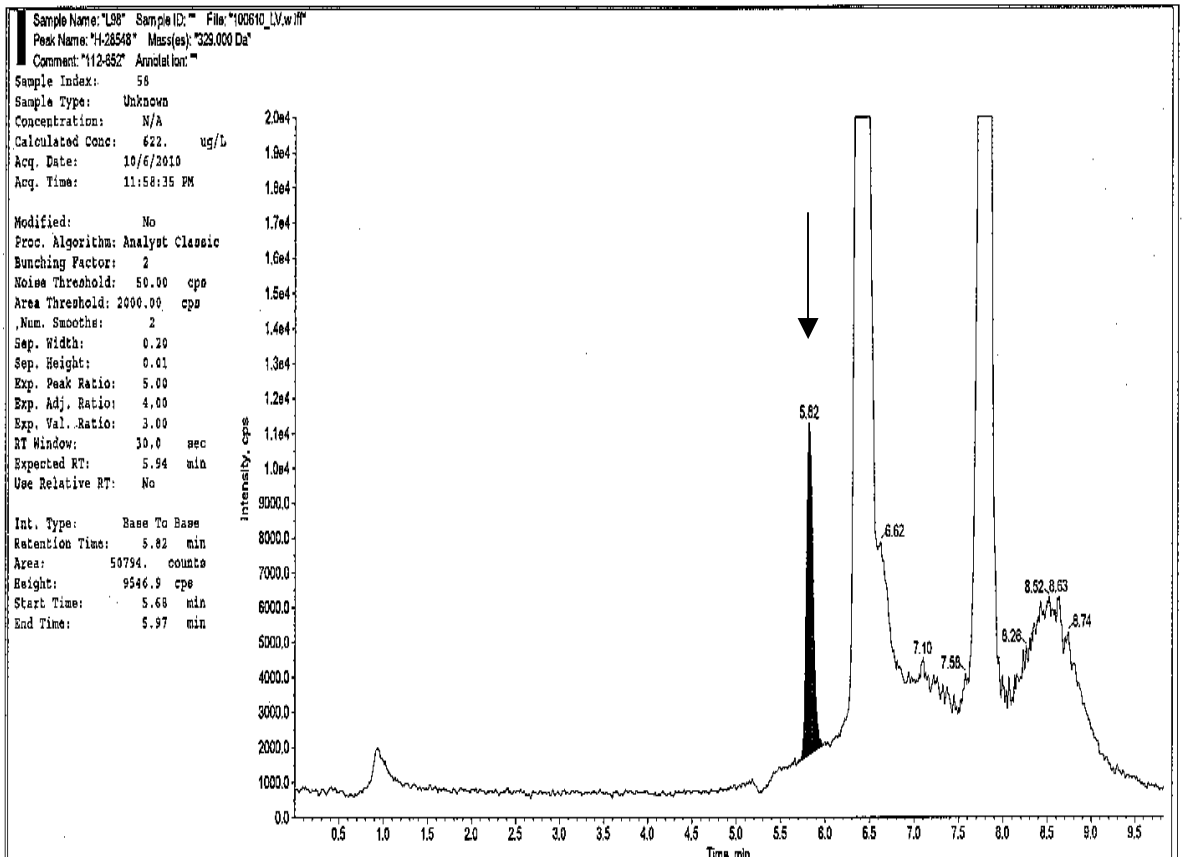
The arrow indicates the approximate retention time of H-28548 (r.t. 5.99).

Appendix XV, Figure 10
Typical chromatogram of a matrix fortification, 112-652-MAS-3L, 25 ppb



The arrow indicates the retention time of H-28548 (r.t. 5.99)

Appendix XV, Figure 11
Typical chromatogram of an avian liver sample 112-652 L98 (from birds exposed to 1000 ppm test level)



The arrow indicates the retention time of H-28548 (r.t. 5.99)

Appendix XV, Figure 12
Typical analytical method outline for the analysis of H-28548 in albumin samples

1. Remove samples egg albumin from freezer. Allow to come to room temperature.

2. Remove 0.500 g of homogenized egg albumin and transfer to a 10 mL Oakridge centrifuge tube. Fortify samples as necessary with an aqueous H-28548 stock. Mix samples well by vortexing for ~10 seconds. Add 100 µL of ion pairing reagent. Add 3.0 mL of MTBE blend sample by vortexing for ~30 seconds.

3. Sonicate in an ultrasonic water bath for ~15 minutes. Then centrifuge the sample at ~ 10000 rpm for ~ 30 minutes. Filter samples through 0.2 um polypropylene filter.

4. Remove an aliquot of sample extract and n-vap as follows:

   For samples with concentrations of 0 to 25 ppb remove 2.00 mL, bring to dryness and reconstitute with 1.00 mL of MEOH.
   For samples with concentrations of 100 ppb remove 1.00 mL, bring to dryness and reconstitute with 1.00 mL of MEOH.
   For samples with concentrations of 1000 to 5000 ppb remove 1.00 mL, bring to dryness and reconstitute with 10.0 mL of MEOH.
   For samples with concentrations of 10000 to 20,000 ppb remove 0.500 mL, bring to dryness and reconstitute with 10.0 mL of MEOH.

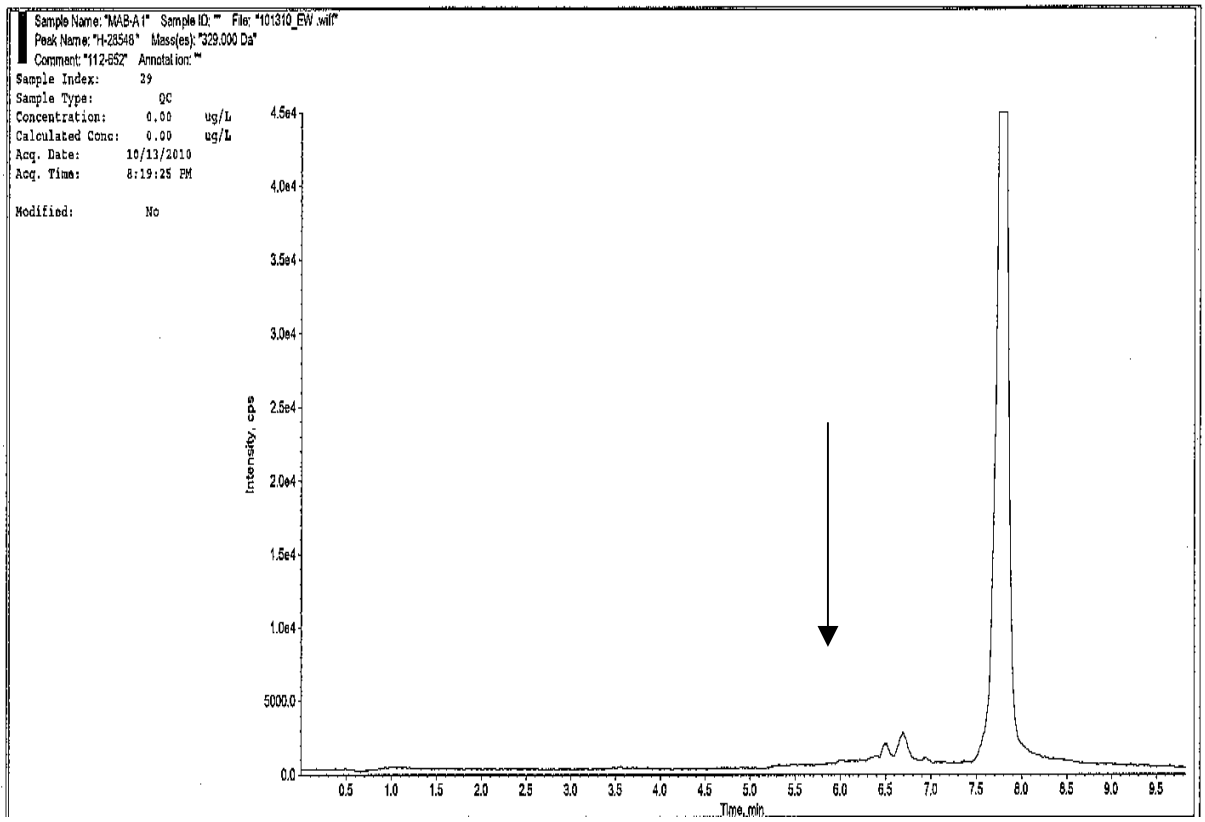
   Reconstitute all samples with the aid of sonication.

5. QC samples were diluted as follows with MEOH:H20 (20:80) and study samples were diluted into the range of the calibration curve in a similar manner:

   For samples with concentrations of 0 to 25 ppb dilute 0.200 mL to 1.00 mL with HPLC grade water
   For samples with concentrations of 1000 ppb dilute 0.400 mL to 10.0 mL with MEOH:H2O (20:80).
   For samples with concentrations of 20,000 ppb dilute 0.200 mL to 10.0 mL with MEOH:H2O (20:80), then 0.100 mL to 1.00 mL with MEOH:H2O (20:80).

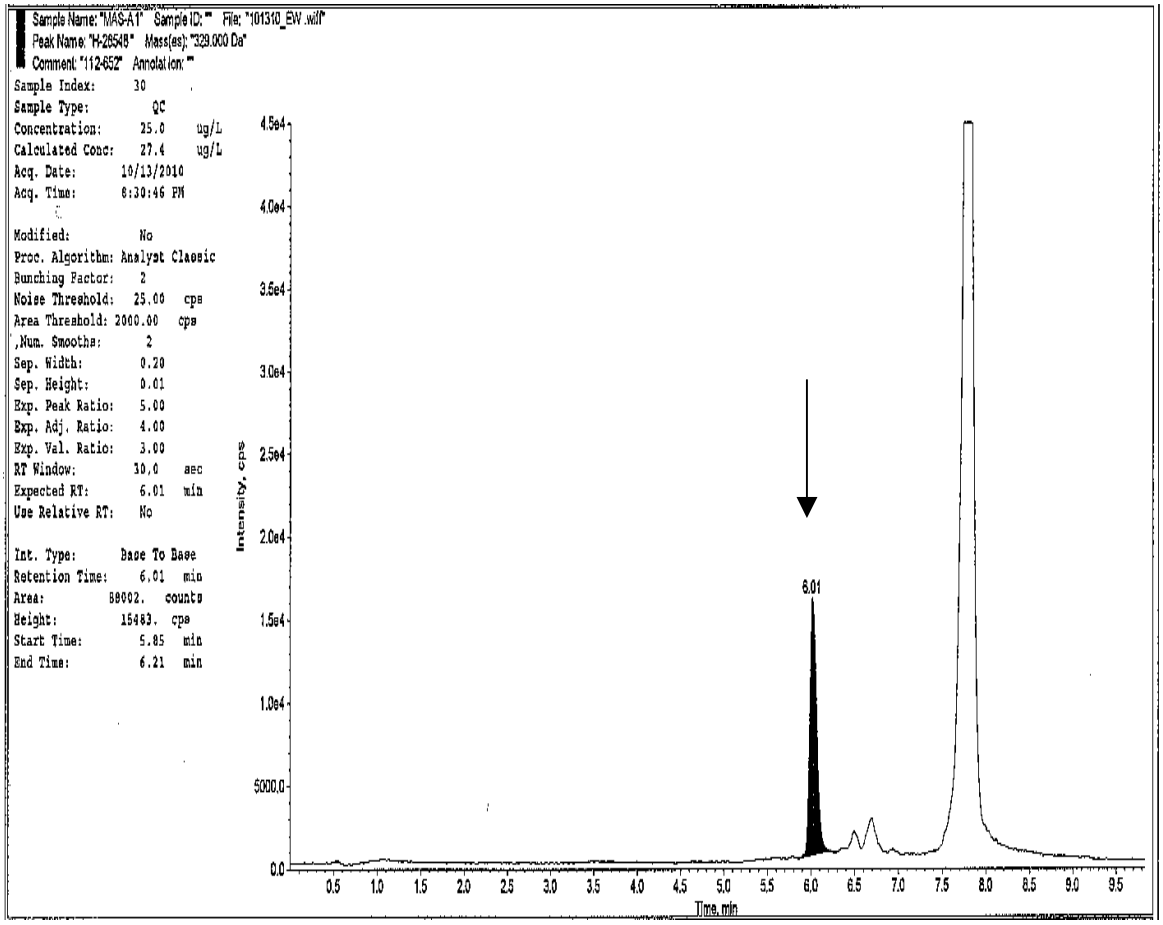
6. Ampulate samples for analysis on LC/MS

Appendix XV, Figure 13
Typical chromatogram of a avian albumin matrix blank, (112-652-MAB-A1)



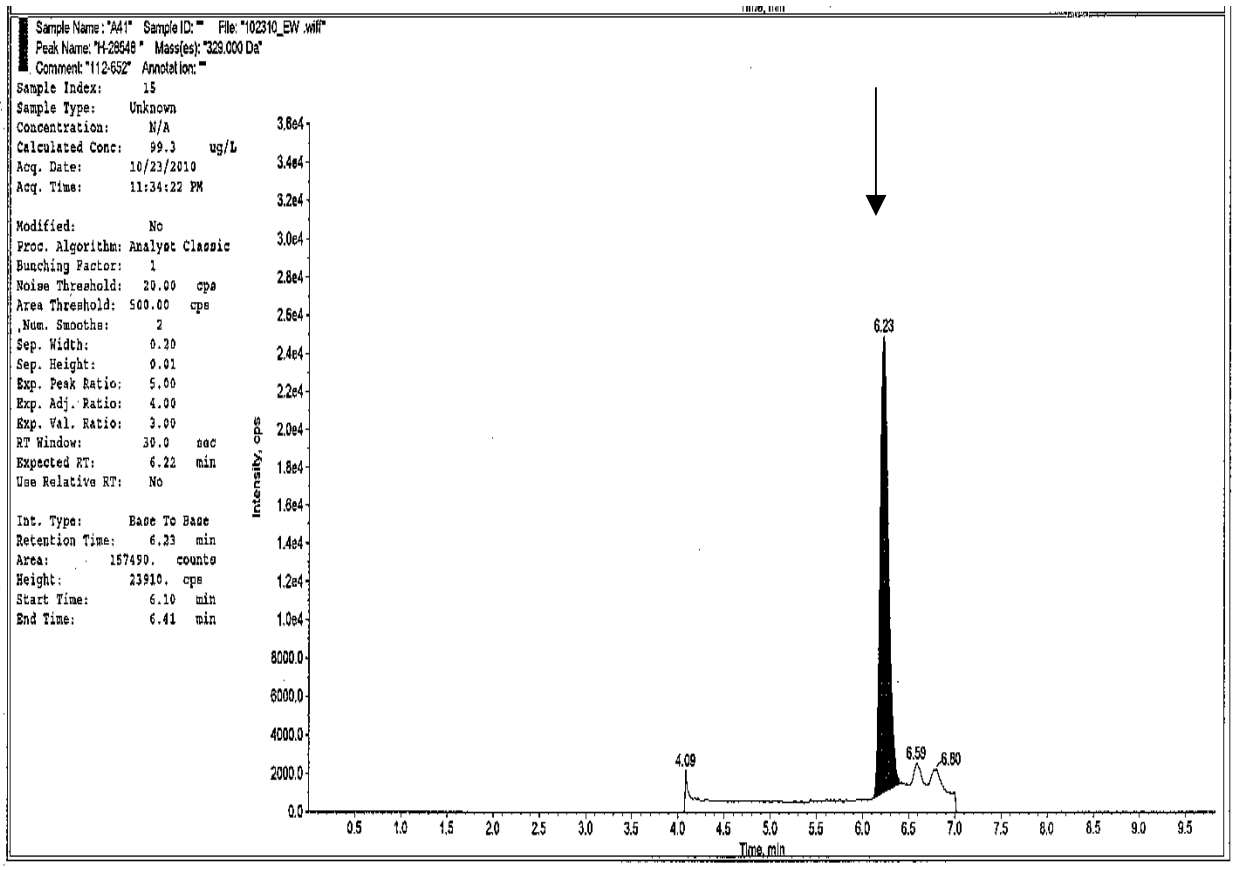
The arrow indicates the approximate retention time of H-28548 (r.t. 6.01).

Appendix XV, Figure 14
Typical chromatogram of a matrix fortification, 112-652-MAS-A1, 25 ppb



The arrow indicates the retention time of H-28548 (r.t. 6.01)

Appendix XV, Figure 15
Typical chromatogram of an avian albumin sample 112-652 A41 (from birds exposed to 100 ppm test level)



The arrow indicates the retention time of H-28548 (r.t. 6.23)

Appendix XV, Figure 16
Typical analytical method outline for the analysis of H-28548 in egg yolk samples

1. Remove samples from freezer. Allow to come to room temperature. Transfer the egg yolk samples to a scintillation vial and homogenize with the motorized disposable pestle.

2. Remove 0.500 g of homogenized egg yolk and transfer to a 10 mL Oakridge centrifuge tube. Fortify samples as necessary with an aqueous H-28548 stock. Mix samples well by vortexing for ~ 30 sec. Add 2 mL of water vortex for ~30 seconds Add 2.0 mL of ion pairing reagent. Add 3.0 mL of MTBE blend sample by vortexing for ~30 seconds.

3. Shake on a tabletop shaker for ~20 minutes at 250 rpm. Then centrifuge the sample at ~ 10000 rpm for ~ 30 minutes. Remove organic phase and transfer to a clean graduated centrifuge tube. Repeat extraction two more times. Bring to a final volume of 10 mL

4. Remove an aliquot of sample extract and n-evap as follows:

   For samples with concentrations of 0 to 50 ppb remove 4.00 mL, bring to dryness and reconstitute with 1.00 mL of MEOH.
   For samples with concentrations of 1000 ppb remove 1.00 mL, bring to dryness and reconstitute with 5.00 mL of MEOH.
   For samples with concentrations of 1000 to 10000 ppb remove 1.00 mL, bring to dryness and reconstitute with 5.00 mL of MEOH.
   For samples with concentrations of 20000 ppb remove 1.00 mL, bring to dryness and reconstitute with 10.0 mL of MEOH

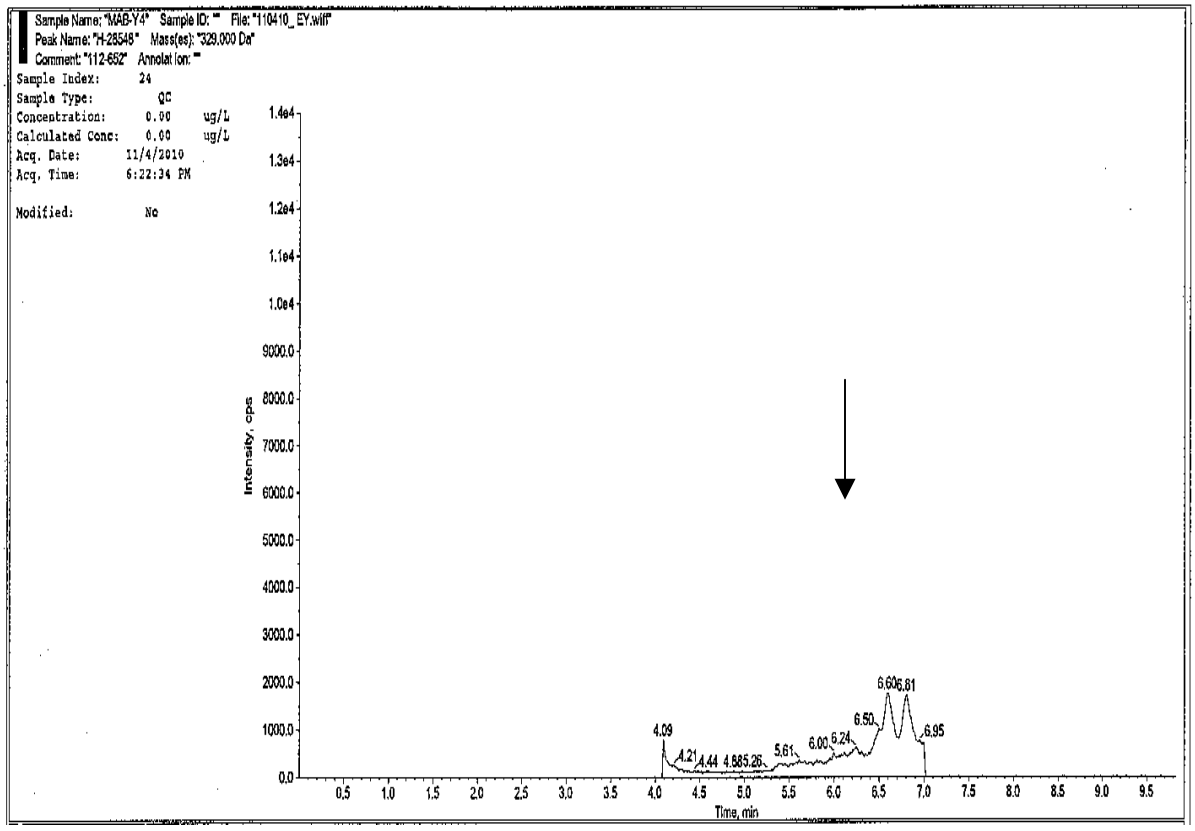
   Reconstitute all samples with the aid of sonication. Centrifuge reconstituted samples at ~1500 rpm for ~10 minutes before proceeding to dilutions.

5. QC samples were diluted as follows, with MEOH:H20 (20:80): and study samples were diluted into the range of the calibration curve in a similar manner:

   For samples with concentrations of 0 to 1000 ppb dilute 0.200 mL to 1.00 mL with HPLC grade water.
   For samples with concentrations of 5000 ppb dilute 0.200 mL to 5.00 mL
   For samples with concentrations of 10000 to 20000 ppb dilute 0.200 mL to 10.0 mL with MEOH:H2O (20:80).

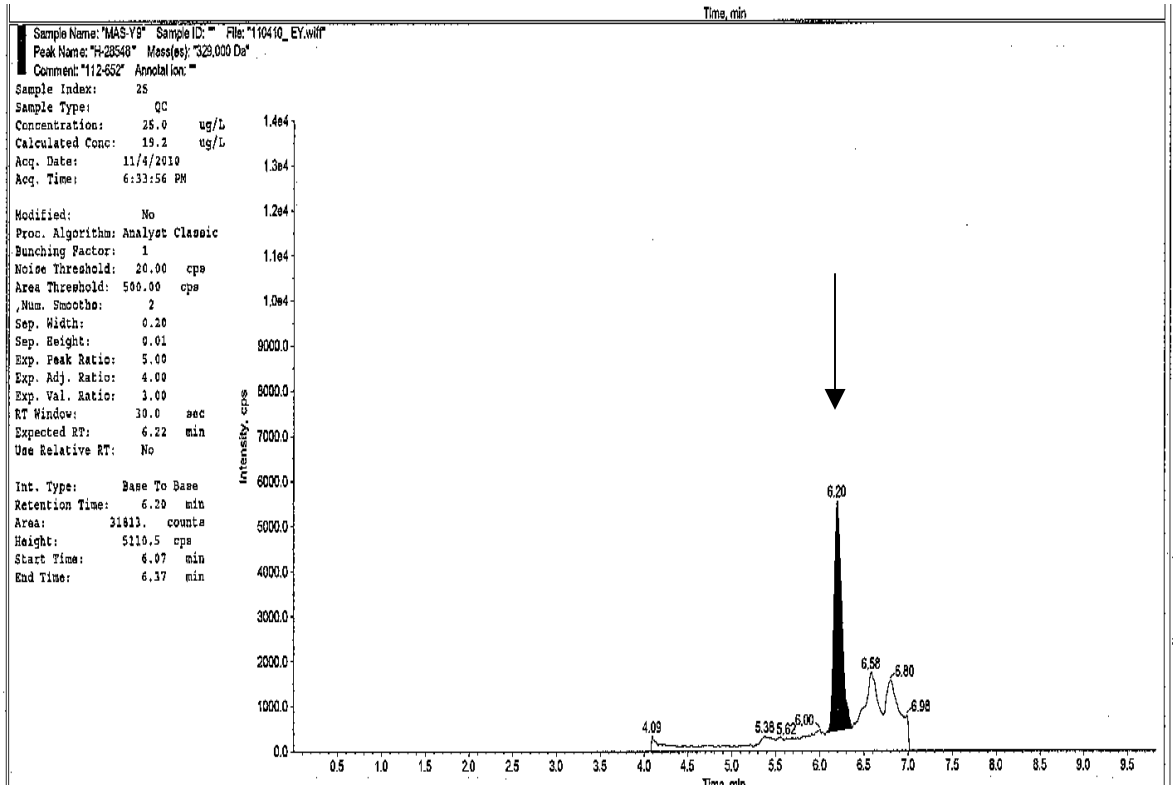
6. Ampulate samples for analysis on LC/MS

Appendix XV, Figure 17
Typical chromatogram of an egg yolk matrix blank, (112-652-MAB-Y4)



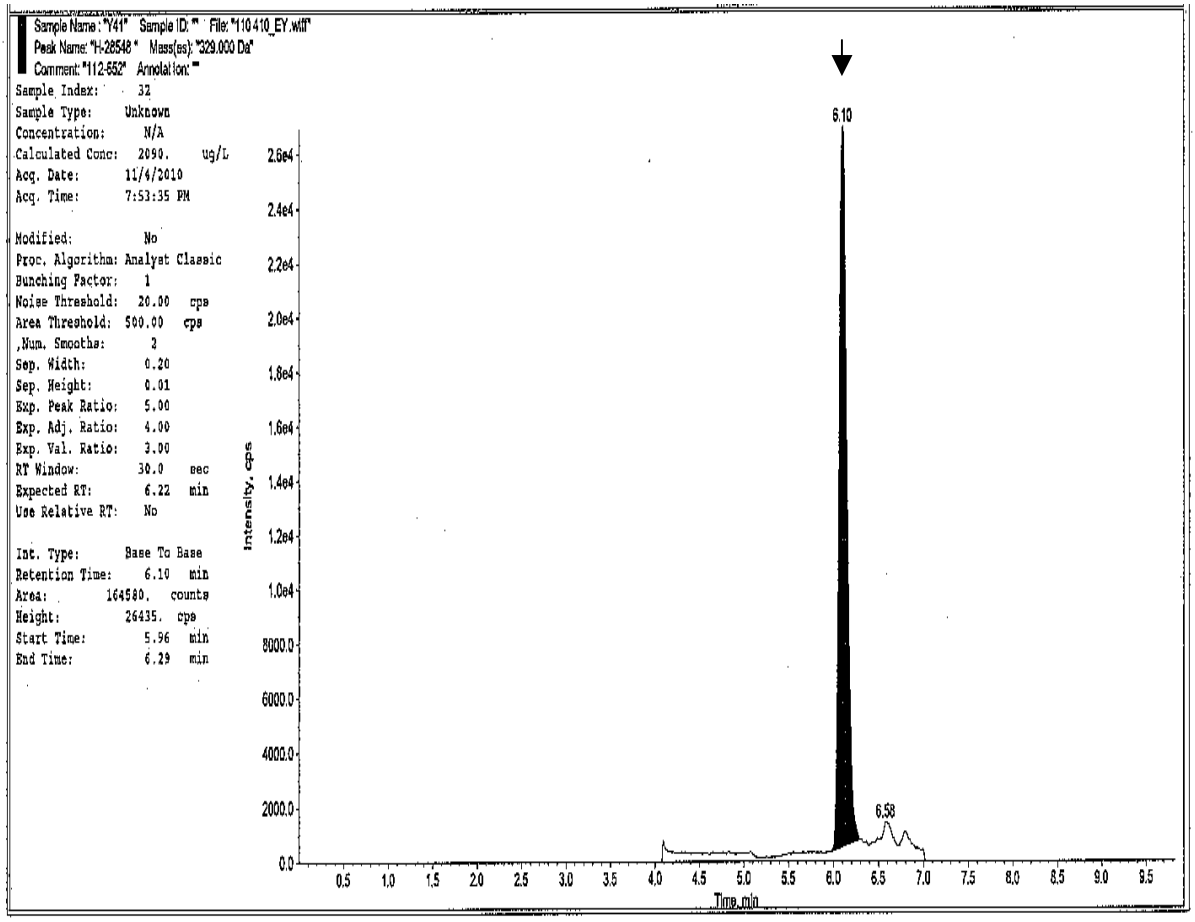
The arrow indicates the approximate retention time of H-28548 (r.t. 6.24).

Appendix XV, Figure 18
Typical chromatogram of a matrix fortification, 112-652-MAS-Y9, 25 ppb



The arrow indicates the retention time of H-28548 (r.t. 6.23)

Appendix XV, Figure 19
Typical chromatogram of an avian egg yolk sample 112-652 Y41 (from bird exposed to 100 ppm. test level)



The arrow indicates the retention time of H-28548 (r.t. 6.10)

Appendix XV, Figure 20
Typical analytical method outline for the analysis of H-28548 in avian egg shell samples

1. Remove 0.500 g of homogenized egg shell and transfer to a 10 mL Oakridge centrifuge tube. Fortify samples as necessary with an ethanol H-28548 stock. Transfer samples to a lab hood to evaporate the ethanol. Add 100 µL of ion pairing reagent. Add 3.0 mL of MTBE blend sample by vortexing, for ~30 seconds.

2. Sonicate in an ultrasonic water bath for ~15 minutes. Then centrifuge the sample at ~ 10000 rpm for ~ 30 minutes. Filter sample through a 0.2 um polypropylene filter.

3. Remove and aliquot of sample extract and n-vap as follows:

   For samples with concentrations of 0 to 25 ppb remove 2.00 mL, bring to dryness and reconstitute with 1.00 mL of MEOH.
   For samples with concentrations of 100 ppb remove 1.00 mL, bring to dryness and reconstitute with 1.00 mL of MEOH.
   For samples with concentrations of 1000 ppb remove 1.00 mL, bring to dryness and reconstitute with 5.00 mL of MEOH.
   For samples with concentrations of 20000 ppb remove 0.500 mL, bring to dryness and reconstitute with 10.0 mL of MEOH

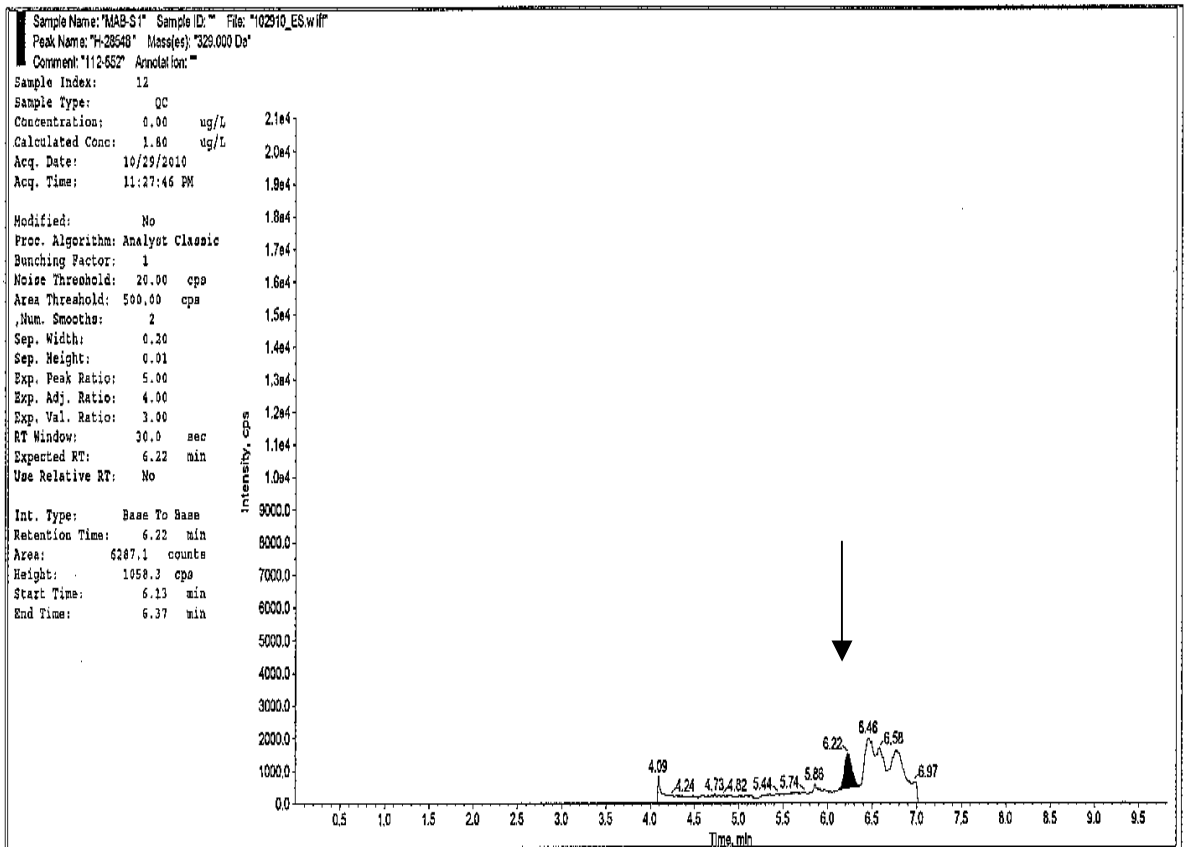
   Reconstitute all samples with the aid of sonication.

4. QC samples were diluted as follows, with MEOH:H20 (20:80): and study samples were diluted into the range of the calibration curve in a similar manner:

   For samples with concentrations of 0 to 25 ppb dilute 0.200 mL to 1.00 mL with HPLC grade water
   For samples with concentrations of 1000 ppb dilute 0.200 mL to 5.00 mL with MEOH:H_2O (20:80)
   For samples with concentrations of 200000 ppb dilute 0.200 mL to 10.0 mL with MEOH:H_2O (20:80)

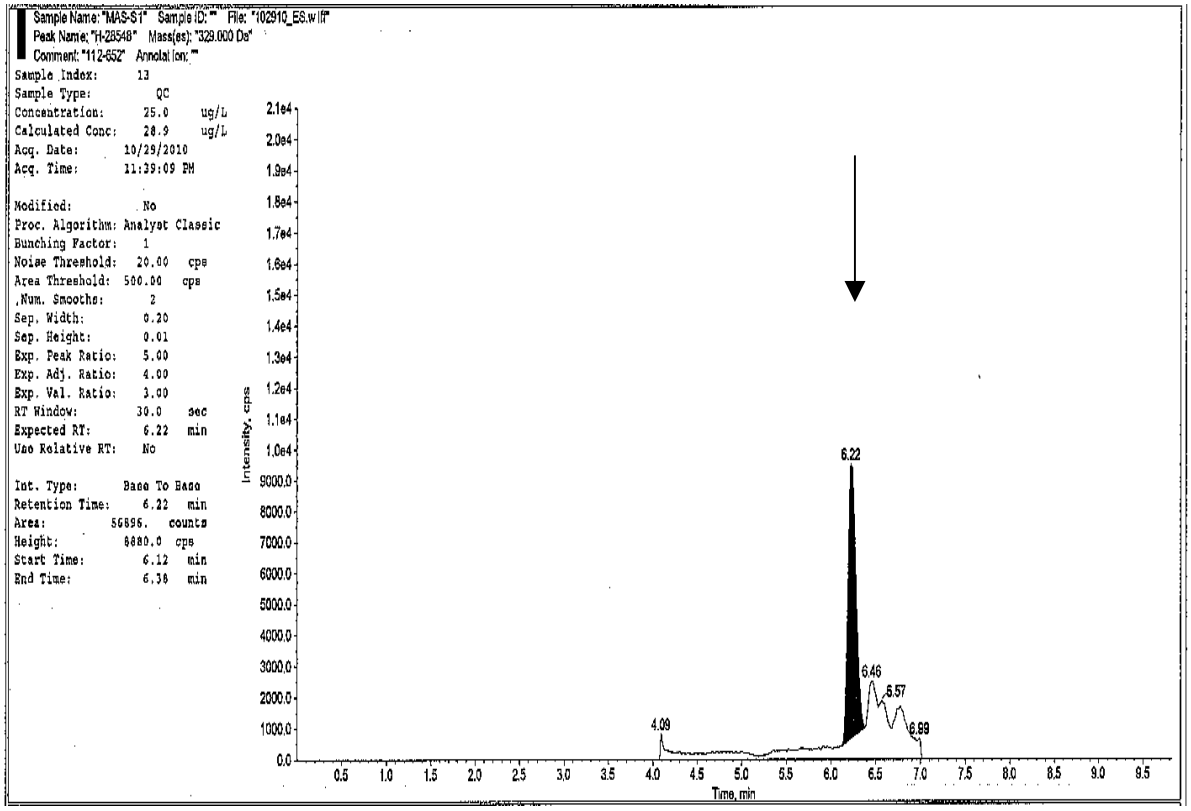
5. Ampulate samples for analysis on LC/MS

Appendix XV, Figure 21
Typical chromatogram of an avian egg shell matrix blank, (112-652-MAB-S1)



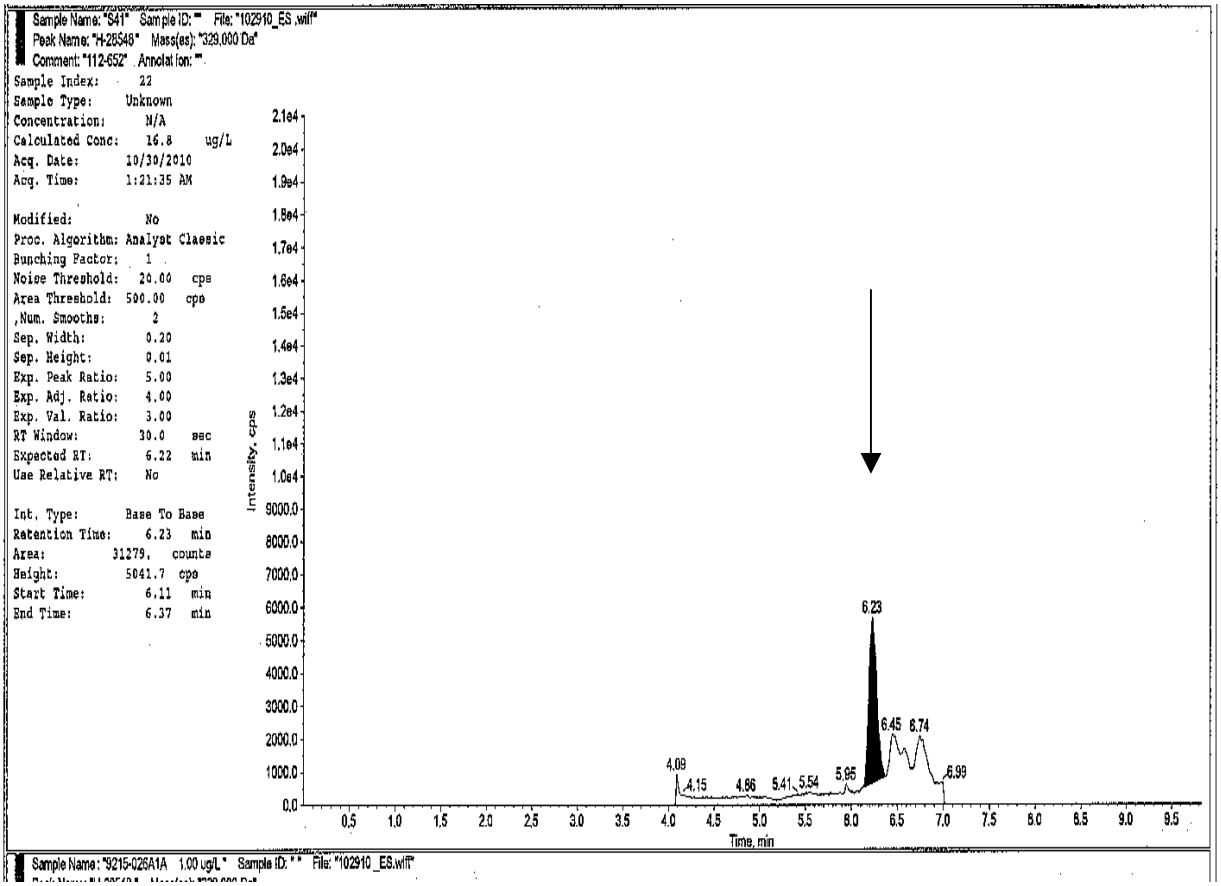
The arrow indicates the approximate retention time of H-28548 (r.t. 6.22).

Appendix XV, Figure 22
Typical chromatogram of a matrix fortification, 112-652-MAS-S1, 25 ppb



The arrow indicates the retention time of H-28548 (r.t. 6.22)

Appendix XV, Figure 23
Typical chromatogram of an avian egg shell sample 112-652 S41 (from bird exposed to 100 ppm. test level)



The arrow indicates the retention time of H-28548 (r.t. 6.23)

Appendix XV, Figure 24
Typical analytical method outline for the analysis of H-28548 in egg membrane samples

1. Remove 0.200 g of homogenized egg membrane and transfer to a 10 mL Oakridge centrifuge tube. Fortify samples as necessary with an ethanol H-28548 stock. Transfer samples to a lab hood to evaporate the ethanol. Add 100 µL of ion pairing reagent. Add 3.0 mL of MTBE and blend sample by vortexing, for ~30 seconds.

2. Sonicate in an ultrasonic water bath for ~15 minutes. Then centrifuge the sample at ~ 10000 rpm for ~ 30 minutes.

3. Remove an aliquot of sample extract and n-vap as follows:

   For samples with concentrations of 0 to 25 ppb remove 0.200 mL, bring to dryness and reconstitute with 0.100 mL of MEOH
   For samples with concentrations of 1000 ppb remove 0.500 mL, bring to dryness and reconstitute with 5.00 mL of MEOH.
   For samples with concentrations of 20000 ppb remove 0.500 mL, bring to dryness and reconstitute with 10.0 mL of MEOH

   Reconstitute all samples with the aid of sonication.

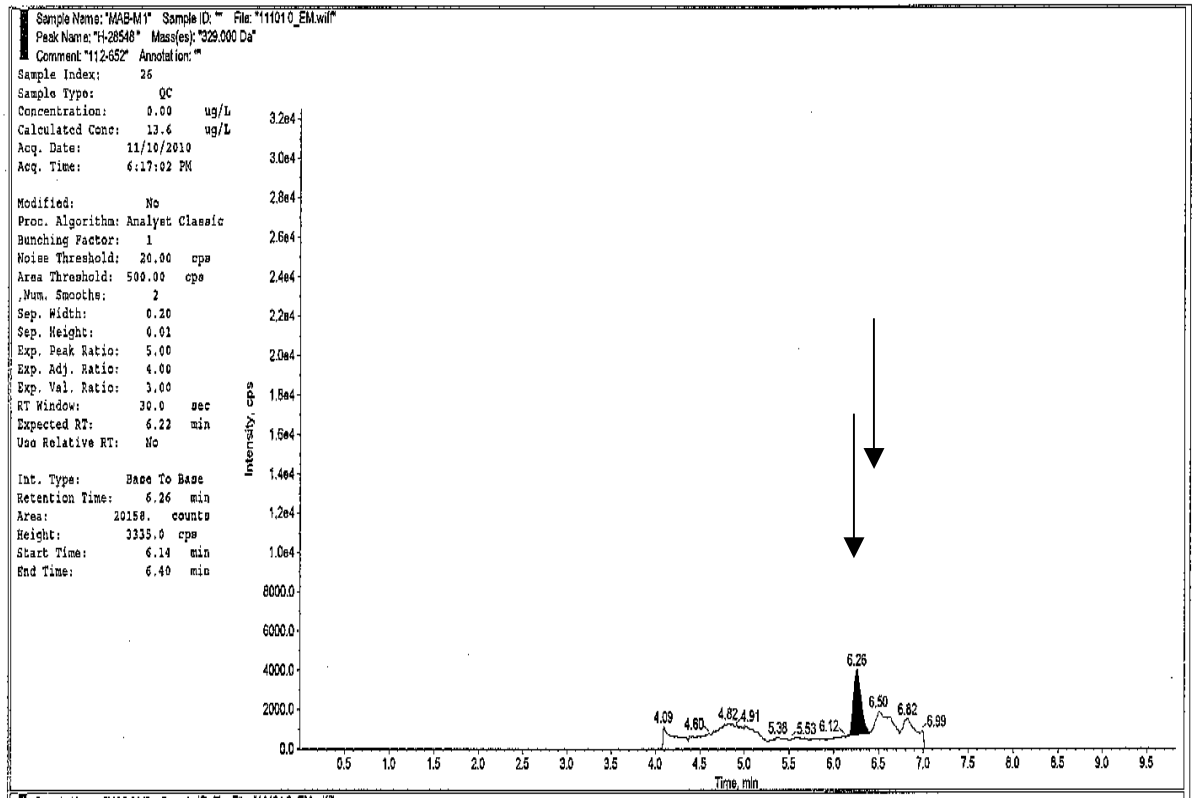
4. QC samples were diluted as follows, with MEOH:H20 (20:80): and study samples were diluted into the range of the calibration curve in a similar manner:

   For samples with concentrations of 0 to 25 ppb dilute 0.200 mL to 1.00 mL, with HPLC grade water
   For samples with concentrations of 1000 ppb dilute 0.100 mL to 1.00 mL with MEOH:H_2O (20:80).

   For samples with concentrations of 20000 ppb dilute 0.100 mL to 10.0 mL with MEOH:H_2O (20:80).

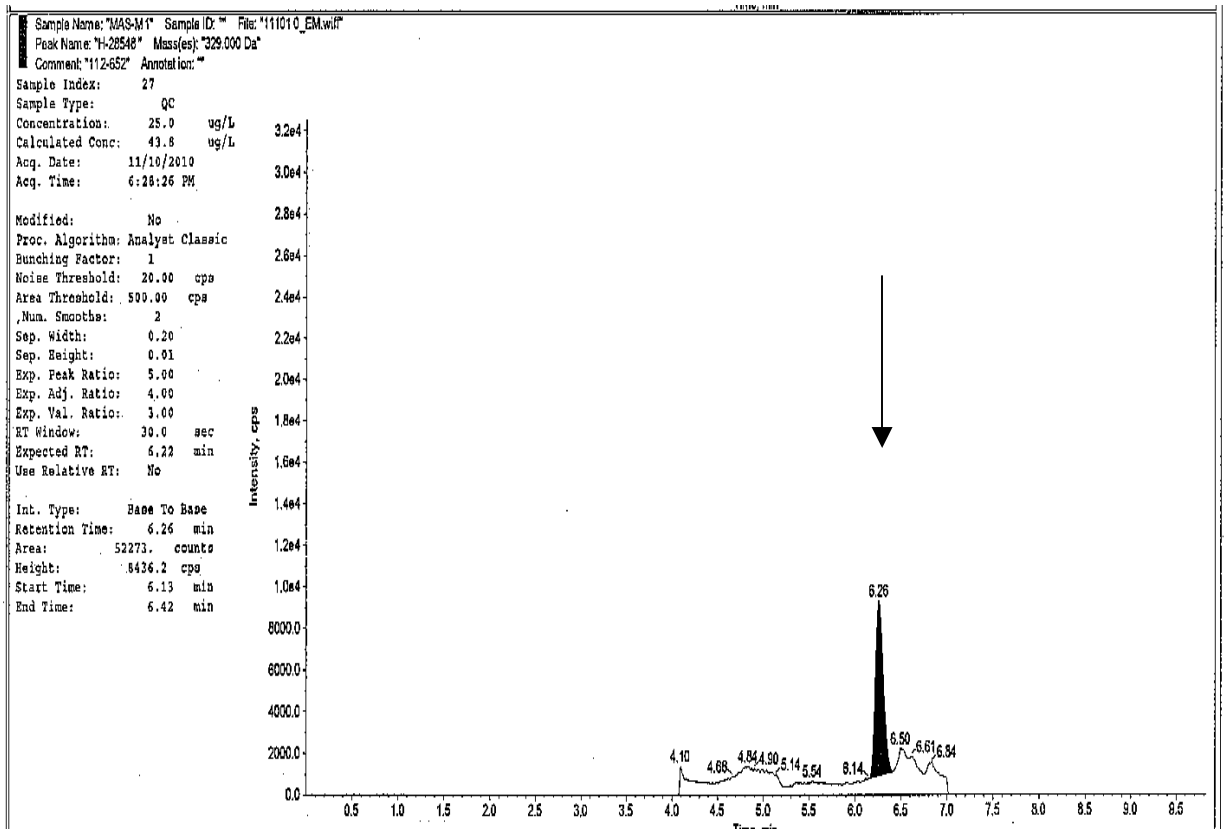
5. Ampulate samples for analysis on LC/MS

Appendix XV, Figure 25
Typical chromatogram of an egg membrane matrix blank, (112-652-MAB-M1)



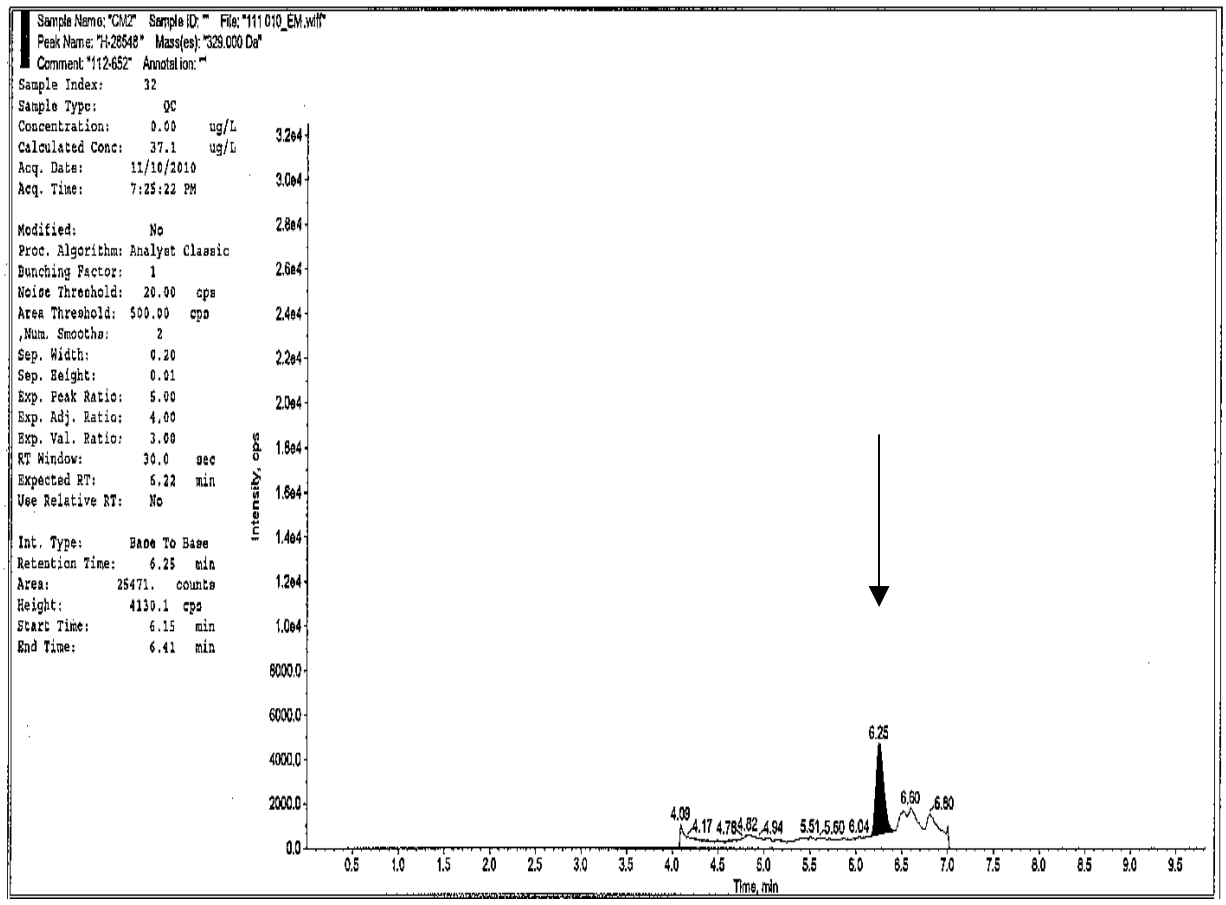
The arrow indicates the approximate retention time of H-28548 (r.t. 6.26)

Appendix XV, Figure 26
Typical chromatogram of an egg membrane matrix fortification, 112-652-MAS-M1, 25 ppb



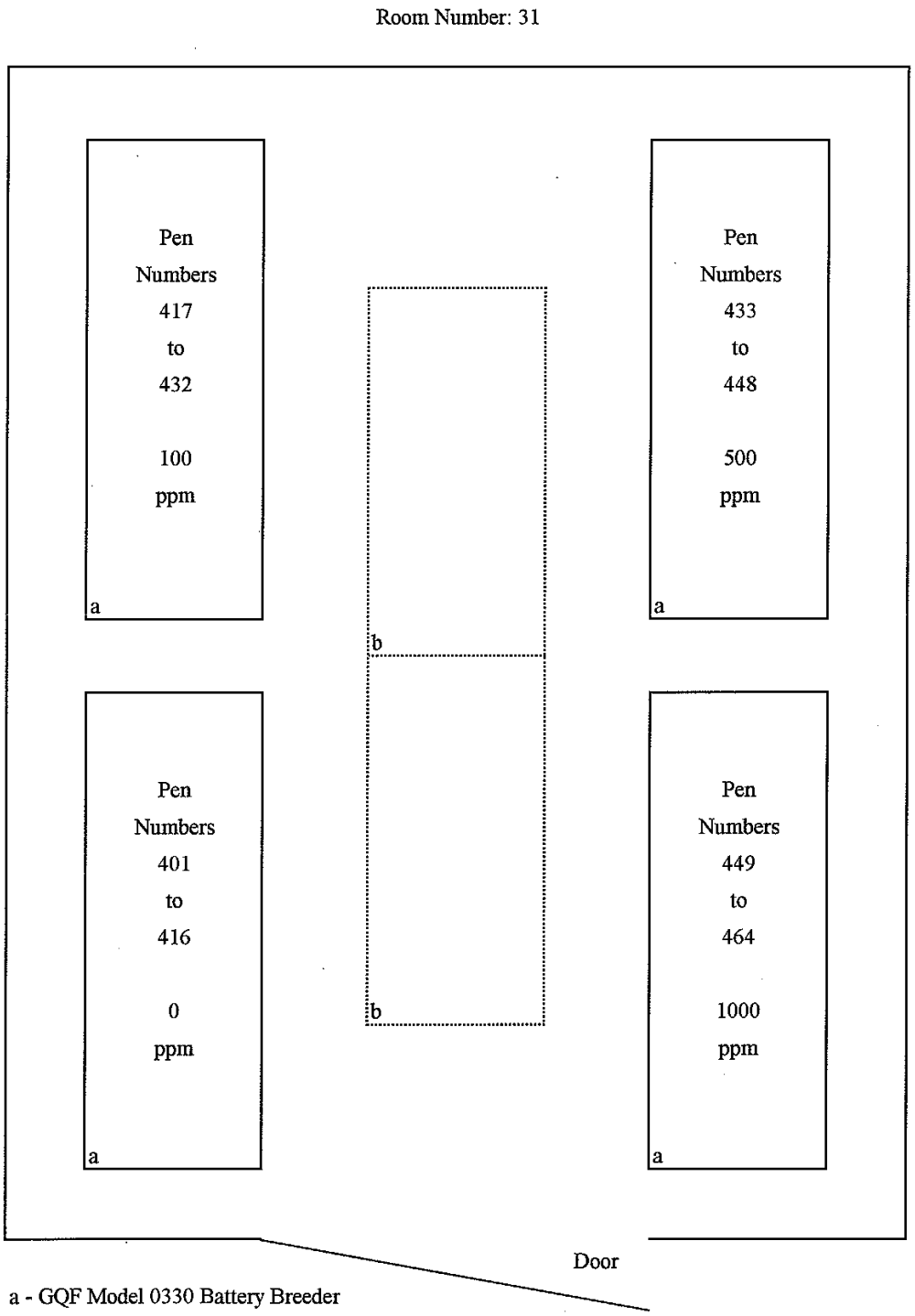
The arrow indicates the retention time of H-28548 (r.t. 6.26)

Appendix XV, Figure 27
Typical chromatogram of an egg membrane sample 112-652-CM2 (100 ppm. nominal)



The arrow indicates the retention time of H-28548 (r.t. 6.26)

Appendix XVI. Diagram of Test Layout



a - GQF Model 0330 Battery Breeder

b - Chroma lights, four-foot

Diagram not to scale. Room approximately 15 x 9 ft. (4.6 x 2.7 m)

Appendix XVII. Changes to Study Protocol

This study was conducted in accordance with the study protocol signed on March 23, 2010 and the following amendment:

1. On Page 13 under RECORDS TO BE MAINTAINED add “Records of all blood drawn, livers collected and egg shells and contents separated and collected for potential analysis.

This study was conducted in accordance with the study protocol signed on March 23, 2010 and the following deviations:

1. Feed consumption for Pen 441 in the 500 ppm treatment group could not be determined over a seven-day period during Weeks 8 and 12.

2. One offspring from the 500 ppm treatment group of Lot B could not be accounted for at 14-day old body weight measurements. Therefore, this offspring was assumed to have died and is not included as a 14-day old survivor.

3. Beginning on August 8, 2010, Day 4 of Week 20, the male and female from Pen 413 in the control group were housed in separate pens.

4. Eggs collected during the study were stored at an overall relative humidity of approximately 89% prior to incubation, rather than the overall relative humidity of approximately 40 to 80% stated in the protocol.

5. The data from Pen 413 was treated as if mortality had occurred during Week 10. Terminal body weight data, feed consumption data from Week 10 until test termination and reproductive data from this pen were excluded from analysis.

Appendix XVIII. Detailed Study Summary

Northern bobwhite **Colinus virginianus**

Subchronic and reproductive toxicity to birds

Northern bobwhite

Dupont-18405
H-28548: A Reproduction Study With The Northern Bobwhite Quail *(Colinus virginianus)*
Report author: Diana L. Temple, Kathy H. Martin, Joann B. Beavers, Mark Jaber

Testing facility: Wildlife International, Ltd., 8598 Commerce Drive, Easton, Maryland 21601 U.S.A.

Executive summary:

A one-generation northern bobwhite (*Colinus virginianus*) reproduction study was conducted with H-28548. The study was conducted according to OECD Guideline 206, Avian Reproduction Test; U.S. EPA Ecological Effects Test Guidelines, OPPTS 850.2300 (draft), Avian Reproduction Test; and U.S. EPA, Pesticide Assessment, Subdivision E, Hazard Evaluation: Wildlife and Aquatic Organisms, Subsection 71-4. Sixteen pairs of northern bobwhite quail received H-28548 in the feed at concentrations of 0, 100, 500, and 1000 ppm (ppm equivalent to mg/kg diet) for 20 weeks. Reproductive parameters were measured beginning at the onset of egg laying. Adult birds were observed for abnormal behaviour, mortality, signs of toxicity, and changes in body weight and food intake. All birds were examined for gross pathological changes. The NOEC for northern bobwhite exposed to H-28548 in the diet for 20 weeks was 1000 mg/kg feed (equivalent to 84.5 mg H-28548/kg bw/d), the highest nominal test concentration, based on the lack of observed effects on any endpoint (including mortality and reproduction) at any test concentration relative to the control.

I. MATERIALS AND METHODS

A. MATERIALS

1.	Test material:	H-28548
	Lot/Batch #:	E109540-44A
	Purity:	84%
	Description:	Liquid
	Stability of test compound:	Stability was demonstrated by chemical analyses of diet samples.
2.	Control:	Untreated diet
	Test vehicle:	Laboratory diet
	Toxic reference:	None

3.	Test organism:	Northern bobwhite quail
	Species:	*Colinus virginianus*
	Age at dosing:	31 weeks
	Weight at dosing:	172 to 242 g
	Source:	M & M Quail Farm, Gillsville, GA 30543, U.S.A
	Acclimation period:	10 weeks
	Diet:	Basal game bird ration (containing at least 27% protein, 2.5% fat, and no more than 5% crude fiber), *ad libitum* (addition of 5% w/w limestone for breeding birds only)
	Water:	Tap water, *ad libitum*
	Housing:	Georgia Quail Farm Manufacturing pens constructed of galvanized wire mesh and galvanized sheeting, measuring approximately 25 X 51 cm, with sloping floors, ceiling height 20 to 26 cm.
4.	Environmental conditions	
	Temperature:	Mean = 21.1°C (+/- 0.9°C SD)
	Relative humidity:	Mean = 60% (+/- 14% SD)
	Photoperiod:	8 hour light per day during acclimation and first seven weeks of test; 17 hours of light per day during remainder of test (approximately 343 lux)

B. STUDY DESIGN AND METHODS:

1. In-life initiated/completed

24-March 2010 to 20-September 2010

2. Experimental treatments

A one-generation northern bobwhite quail (*Colinus virginianus*) reproduction study was conducted with H_28548. Sixteen pairs of northern bobwhite received H-28548 in the feed at concentrations of 0, 100, 500 and 1000 ppm for 20 weeks.

3. Diet preparation and analysis

Test diets were prepared by mixing H-28548 into a premix that was used for weekly preparation of the final diet. Control diet and each of the three treated diets were prepared weekly beginning on March 24, 2010 and presented to the birds on Wednesday of each week. Dietary concentrations were not adjusted for purity of the test substance.

4. Observations

Reproductive parameters were measured beginning at the onset of egg laying. Adult birds were observed for abnormal behavior, mortality, signs of toxicity, and changes in body weight and food intake. All birds were examined for gross pathological changes.
The following observations were taken:

Egg counts: weekly (eggs were collected daily with counts done on a per week basis);
Egg shell thickness: weekly;
Eggs cracked: weekly
Viable embryos: eggs were candled on day 11 (northern bobwhite) of incubation to determine embryo viability and on day 21 to determine embryo survival
Average hatchling weight: On the day of hatch and at 14 days of age;
Adult body weights: day-0 (initial), Weeks 2, 4, 6, 8 and at termination;
Feed consumption: weekly through the test;
Mortality: daily throughout the test (offspring were observed until 14 days of age)
Abnormal behavior and signs of toxicity: daily through the test (offspring were observed until 14 days of age)
All adult birds were examined for gross pathological changes.

5. Statistics

Analysis of variance (ANOVA) and Dunnett's multiple comparison procedure: Determine statistical difference between the control group and treatment groups.

Percentage data were examined using Dunnett's method following arcsine square root transformation.

The following parameters were analyzed statistically:

Adult Body Weight
Adult Feed Consumption;
Eggs Laid of Maximum Laid (the number of eggs laid per female divided by the largest number of eggs laid by any one female);
Eggs Cracked of Eggs Laid (the number of eggs determined by candling to be cracked divided by the number of eggs laid, per pen);
Viable Embryos of Eggs Set (the number of viable embryos at the Day 11 candling was divided by the number of eggs set, per pen);
Live 3-Week Embryos of Viable Embryos (the number of live embryos at the Day 21 candling was divided by the number of viable embryos, per pen);
Hatchlings of 3-Week Embryos (the number of hatchlings removed from the hatcher was divided by the number of live 3-week embryos, per pen);
14-Day Old Survivors of Hatchlings (the number of 14-day old survivors was divided by the number of hatchlings, per pen);
Hatchlings of Eggs Set (the number of hatchlings was divided by the number of eggs set, per pen;
14-Day Old Survivors of Eggs Set (the number of 14-day old survivors was divided by the number of eggs set per pen);
Hatchlings of Maximum Set (the number of hatchlings per female divided by the largest number of eggs set from any one female);
14-Day Old Survivors of Maximum Set (the number of 14-day old survivors per pen divided by the largest number of eggs set);
Egg Shell Thickness;
Offspring Body Weight (0 and 14 days after hatch).

II. RESULTS AND DISCUSSION

A. FINDINGS

Analyzed test diet samples demonstrated that H-28548 was homogeneously mixed in the diet and that the targeted concentrations ranged from 91-97% of nominal concentrations at all dietary levels. There was no H-28548 detected in diet samples collected from the control group during the test period.

No mortalities occurred during the study. All adults were subjected to gross necropsy. All necropsy findings observed were considered unrelated to treatment.

No overt signs of toxicity were observed at any of the test concentrations. Incidental clinical observations noted during the test included those that normally are associated with injuries and penwear. Such signs included feather loss, foot, head, neck and back lesions, bumps, bruising and swelling. Additional clinical observations included lameness, a ruffled appearance, wing droop, ventral head curl and the female in Pen 445 of the 500 ppm treatment group was noted as thin during Week 20 of the test. Except for incidental findings, all birds appeared normal throughout the study.

There were no apparent treatment related effects upon adult body weight at any of the test concentrations. No statistically significant differences between the control group and the 100, 500, or 1000 ppm treatment groups were observed at any of the body weight intervals.

There were no apparent treatment related effects upon feed consumption at any of the test concentrations. No statistically significant differences between the control group and the 100, 500 or 1000 ppm treatment groups were observed at any of the feed consumption intervals.

There were no treatment-related effects upon reproductive performance at any of the test concentrations. When compared to the control group, there were no statistically significant differences in any of the reproductive parameters measured in the 100, 500 or 1000 ppm treatment groups.

Body weight, reproduction, and toxicity data are shown in the tables that follow.

Table 1
Mean adult body weight (g) of northern bobwhite quail exposed to H-28548 in the diet

Nominal H-28548 concentration (mg/kg diet) [a]	Sex	Mean body weight (g) [a, b]						Total weight change (g)
		Wk 0	Wk 2	Wk 4	Wk 6	Wk 8	Adult termination	
Control (0.0)	Males	201	206	207	208	210	211	10
	Females	200	205	206	207	210	248	47
100	Males	201	207	205	206	208	207	6
	Females	198	204	203	204	206	247	48
500	Males	202	205	206	208	210	211	9
	Females	198	200	200	203	207	230	32
1000	Males	202	207	207	209	212	215	14
	Females	200	204	202	203	205	241	41

[a] mg/kg diet is equivalent to ppm
[b] There were no significant differences from the control (alpha = 0.05).

Table 2
Reproductive effects of H-28548 on northern bobwhite quail

Reproductive parameter	Test group (dietary concentration in mg/kg feed)			
	0	100	500	1000
Number of replicates	15	16	16	16
Total eggs laid/group	647	780	688	658
Eggs cracked	11	3	6	8
Eggs set	567	699	611	579
Viable embryos	548	634	560	545
Live three-week embryos	542	632	559	538
Hatchlings	524	544	510	480
14-day-old survivors	489	505	480	454
Eggs laid/hen	43	49	43	41
Eggs laid/hen/day[a]	0.47	0.54	0.47	0.45
14-day-old survivors/hen	33	32	30	28
Egg shell thickness (mm)	0.225	0.234	0.237	0.237
Hatchling body weight (g)	6	6	6	6
14-day old chick body weight (g)	26	27	27	27

[a] Based on 91 days of egg production.

Table 3
Reproductive effects, normalized as percentages of H-28548 on northern bobwhite quail

Reproductive parameters	Test group (dietary concentration in mg/kg feed)			
	0	**100**	**500**	**1000**
Number of replicates	15	16	16	16
Total number eggs laid	647	780	688	658
Eggs laid/maximum laid (%)	62	70	61	59
Eggs cracked/eggs laid (%)	2	0	1	1
Viable embryos/eggs set (%)	97	90	94	94
Live three-week embryos/viable embryos (%)	99	100	100	99
Hatchlings/live 3-week embryos (%)	95	86	91	89
14-Day old survivors/hatchlings (%)	92	93	94	94
Hatchlings/eggs set (%)	91	78	86	83
14-Day-old survivors/eggs set (%)	84	72	80	79
Hatchlings/maximum set (%)	55	54	51	48
14-Day-old survivors/maximum set (%)	52	50	48	45

Table 4
Summary of subchronic toxicity and reproductive endpoints in northern bobwhite quail exposed to H_28548

Test item	H-28548
Test object	Northern bobwhite quail *(Colinus virginianus)*
Lowest observed effect concentration (LOEC)	None
Highest tested dose without toxic effect (NOEC)	1000 mg/kg feed (equivalent to 84.5 mg H-28548/kg bw/d)
Toxic threshold effect level, TEL, mean LOEC– NOEC	1000 mg/kg feed (equivalent to 84.5 mg H-28548/kg bw/d)

III. CONCLUSIONS

The NOEC for northern bobwhite quail exposed to H-28548 in the diet for 20 weeks was 1000 mg/kg feed (equivalent to 84.5 mg H-28548/kg bw/d), the highest nominal test concentration, based on the lack of observed effects on any endpoint (including mortality and reproduction) at any test concentration relative to the control.

(Temple, D. L., 2010)